

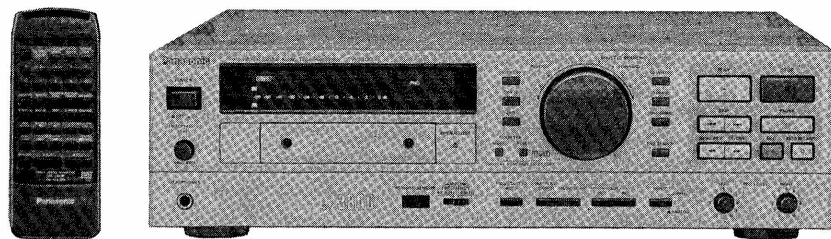
# Service Manual

Professional Digital Audio Tape Recorder

**SV-3800E-H**

**SV-3800EB-H**

RA1001 MECHANISM SERIES



**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

## Specifications

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### Signal format

<b>Tape recording system:</b>	Rotary head type DAT
<b>Sampling frequencies</b> (selected automatically):	
<b>Analog input recording</b>	48 kHz, 44.1 kHz
<b>Playback/Digital input recording</b>	48 kHz, 44.1 kHz, 32 kHz
<b>No. of quantizing bits:</b>	16-bit linear
<b>No. of channels:</b>	2 (stereo)

### Audio parameters

(Recording and Playback System)

<b>Frequency response:</b>	
fs: 48 kHz	10 Hz–22000 Hz (±0.5 dB)
fs: 44.1 kHz	10 Hz–20000 Hz (±0.5 dB)
fs: 32 kHz	
(only playback)	10 Hz–14500 Hz (±0.5 dB)
<b>Total harmonic distortion:</b>	Less than 0.03% (+4 dBu, 1 kHz)*
	Less than 0.007% (+22 dBu, 1 kHz)*
<b>Dynamic range:</b>	Greater than 92 dB*
<b>S/N:</b>	Greater than 92 dB*
<b>Wow and flutter:</b>	Unmeasurable

\*DIN audio weighted (22.4 Hz to 22.4 kHz bandpass filter)

### Remote control

<b>Parallel remote:</b>	8 pin DIN connector (50 functions available)
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### Mechanism

<b>Cylinder diameter:</b>	30 mm
<b>Cylinder rotation speed:</b>	2000 r/min.
<b>Tape speed:</b>	
(Normal track)	8.150 mm/s
(Wide track: Music tape)	12.225 mm/s
<b>Search speed:</b>	Up to 250 times normal playback speed
<b>FF/Rewind speed:</b>	Up to 250 times normal playback speed
<b>FF/Rewind time:</b>	Approx. 35 s (2 hours DAT tape)

### General

<b>Power consumption:</b>	30 W
<b>Power supply:</b>	AC 50 Hz, 230–240 V
<b>Dimensions</b> (W×H×D):	430×122×315 mm
<b>Weight:</b>	5.9 kg

**Note:**  
Specifications are subject to change without notice.  
Weight and dimensions are approximate.

### Terminals

<b>Analog input:</b>	
<b>Input jacks</b>	XLR-3 type
<b>Nominal input level</b> (–18 dB rec level)	+4 dBu
<b>Input impedance</b>	10 kΩ balanced
<b>Analog output:</b>	
<b>Output jacks</b>	XLR-3 type
<b>Nominal output level (–18 dB)</b>	+4/–10 dBu
<b>Output impedance</b>	50 Ω balanced
<b>Headphones output:</b>	
<b>Maximum level</b>	30mW+30mW (32 Ω)
<b>Matching impedance</b>	8–600 Ω
<b>Digital (AES/EBU type):</b>	
<b>Input</b>	XLR-3 type/110 Ω balanced
<b>Output</b>	XLR-3 type/110 Ω balanced
<b>Digital (IEC type II):</b>	
<b>Input</b>	RCA phono type (Coaxial)/75 Ω, Optical
<b>Output</b>	RCA phono type (Coaxial)/75 Ω, Optical

# INTRODUCTION

This Service Manual Contains the technical information which service personnel to understand and service the Panasonic Digital Tape Recorder (DAT) model SV-3800.

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## Caution for AC Mains Lead

### (For United Kingdom)

("EB" area code model only)

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the Earth symbol  $\perp$  or coloured GREEN or GREEN-AND-YELLOW.

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

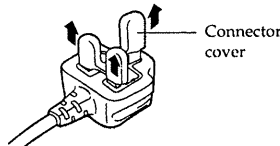
**IMPORTANT** A 5 amp fuse is fitted in this plug.  
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS1362. Check for the ASTA mark or BSI mark on the body of the fuse. IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY. THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.  
If a new plug is to be fitted please observe the wiring code as shown below. If in any doubt please consult a qualified electrician.

**IMPORTANT** The wires in this mains lead are coloured in accordance with the following code:  
Green-and-Yellow: Earth  
Blue: Neutral Brown: Live

**WARNING** THIS APPLIANCE MUST BE EARTHED.

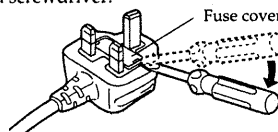
### Before use

Remove the connector cover as follows.

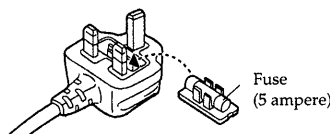


### How to replace the fuse

- 1 Remove the fuse cover with a screwdriver.

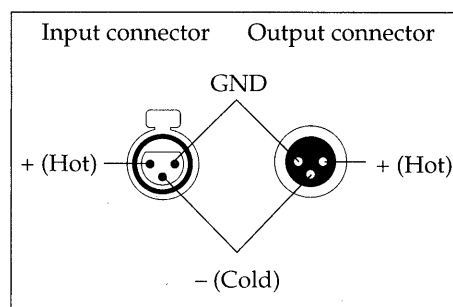
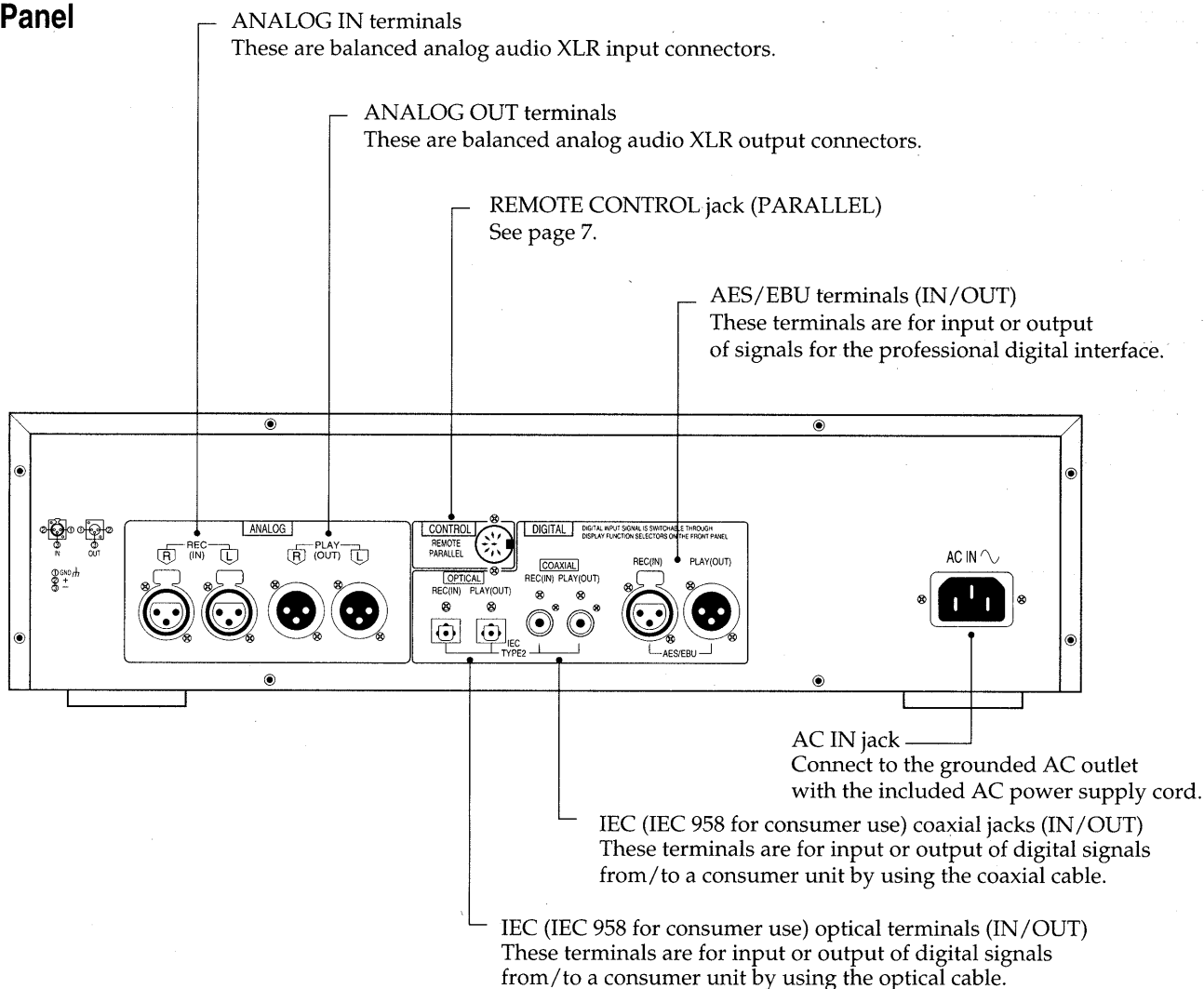


- 2 Replace the fuse and attach the fuse cover.



## ■ CONNECTIONS

### Rear Panel



### When making digital IN/OUT connections

If the connections to studio equipment are set incorrectly, a loop may be set up where the output of the unit is connected to its recording input. This will not only set up an oscillation but may also damage the monitor speakers. Attention should therefore be paid to the following points:

- 1) When recording or playing back through the unit's DIGITAL IN/OUT terminals, be sure to connect these terminals to the DIGITAL PLAYBACK (IN)/DIGITAL REC OUT (OUT) terminals of other equipment.
- 2) If the monitor amplifier has no DIGITAL PLAYBACK or DIGITAL REC OUT terminals, this unit (DAT) can be used only for playback through the ordinary DIGITAL INPUT terminals on the amplifier.
- 3) If connections are made as in 2) and it is desired to record, do not on any account set the INPUT SELECTOR of the amplifier to "DIGITAL".



## ■ CONCERNING THE REMOTE CONTROL

This unit has two systems for remote control operation, using the infra-red remote sensor or the 8-pin parallel input terminals.

### Remote Control Transmitter

#### Battery installation

Insert the batteries with using two AAA, IEC R03, UM-4 (1.5 V) or equivalent batteries in the correct polarities (+, -).

To remove the batteries, push down the (-) side.

- Notes:**
- Do not mix old and new batteries, or batteries of different types (manganese and alkaline, etc.).
  - Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
  - If the remote control is not to be used for a long period of time, remove the batteries and store them in a cool, dark place.
  - Do not attempt to recharge alkaline or manganese batteries.

#### Battery life:

The battery life is about one year. The batteries should be replaced if commands from the remote control transmitter do not operate the unit even when the transmitter is held close to the front panel.

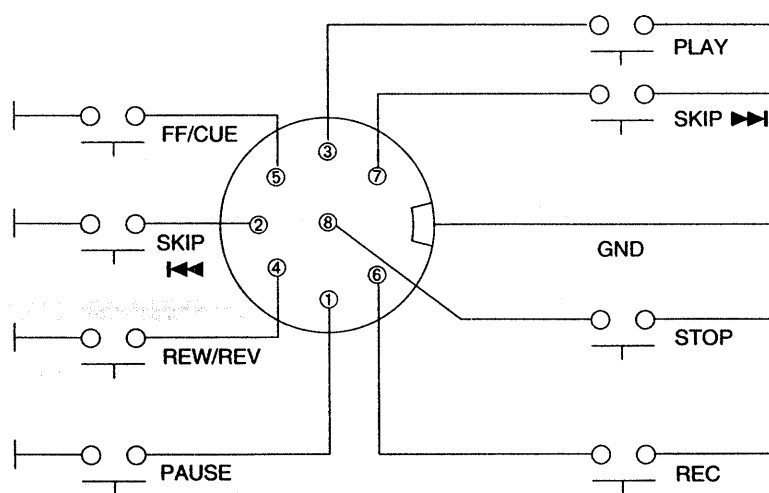
#### Correct method of use

- 1 Aim the remote control's transmission window toward the unit's sensor. Avoid any obstacles.
  - 2 Use the remote control within a 60-degree angle of the unit.
- The maximum distance is within 7 meters (23 feet) directly facing toward the unit.

- Notes:**
- Be sure the transmission window and the unit's sensor are free from dust. Excessive dust might affect its performance.
  - The operation may not be correct if direct sunlight or other strong light source strikes the receiving sensor of this unit. If there is a problem, place the unit away from the light source.
  - If this unit is installed in a rack with glass doors, the glass doors' thickness or color might make it necessary to use the remote control a shorter distance from the unit.

### 8-Pin Parallel Input Terminals

By connecting the following circuits, the SV-3800 can be operated by remote control using normal switches.



## 8-Pin Remote Specifications

8-pin remote key code:

**Note:** The time taken until the key code for operating multiple commands must be less than 1 ms, and each code input must be more than 60 ms.

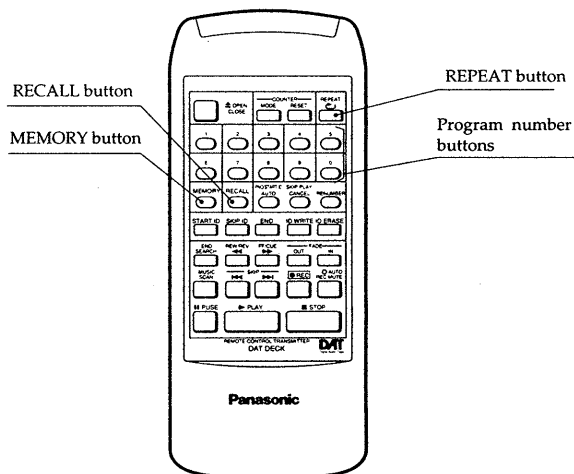
Function	8-pin DIN jack key	Function	8-pin DIN jack key
	Code No. 87654321		Code No. 87654321
open	00000001	memory	01000000
music scan	00011000	recall	01000001
skip cancel	00110000	repeat	01100001
stop	01111111		
play	11111011	write_start-ID	01010000
write	01101001	write_skip-ID	01010001
		erase_start-ID	01110000
auto rec mute	00100000	erase_skip-ID	01110001
rec	11011111		
pause	11111110	rec+play	11011011
forward skip	10111111	direct rec_pause	00011001
reverse skip	11111101	direct rec_play	00111000
		unload	00111001
counter mode	00101000	mode+reset+pause	10110000
auto PNO	00110001		
fade in	00100001	skip cancel on	00000010
fade out	00001000	skip cancel off	00000011
ff	11101111	auto PNO on	00100010
rew	11110111	auto PNO off	00100011
renumber	00010001		
counter reset	00001001		
end-ID	01101000		
skip-ID	01001001		
start-ID	01001000		
end search	01100000		
erase	00010000		
0 (key pad)	11000001		
1 (key pad)	10000000		
2 (key pad)	10000001		
3 (key pad)	10100000		
4 (key pad)	10100001		
5 (key pad)	10001000		
6 (key pad)	10001001		
7 (key pad)	10101000		
8 (key pad)	10101001		
9 (key pad)	11000000		

0: The connection is shorted.

1: The connection is open.

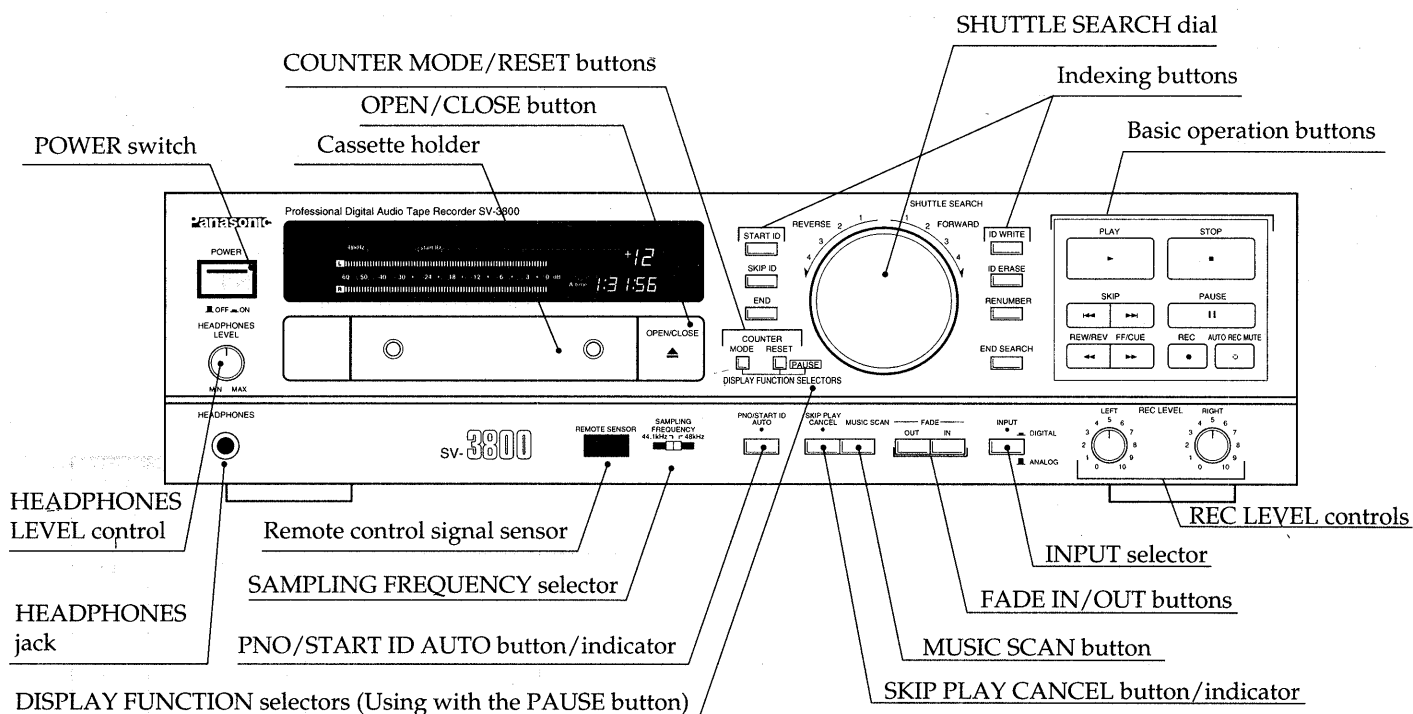
## LOCATION OF CONTROLS

### Remote Control Transmitter

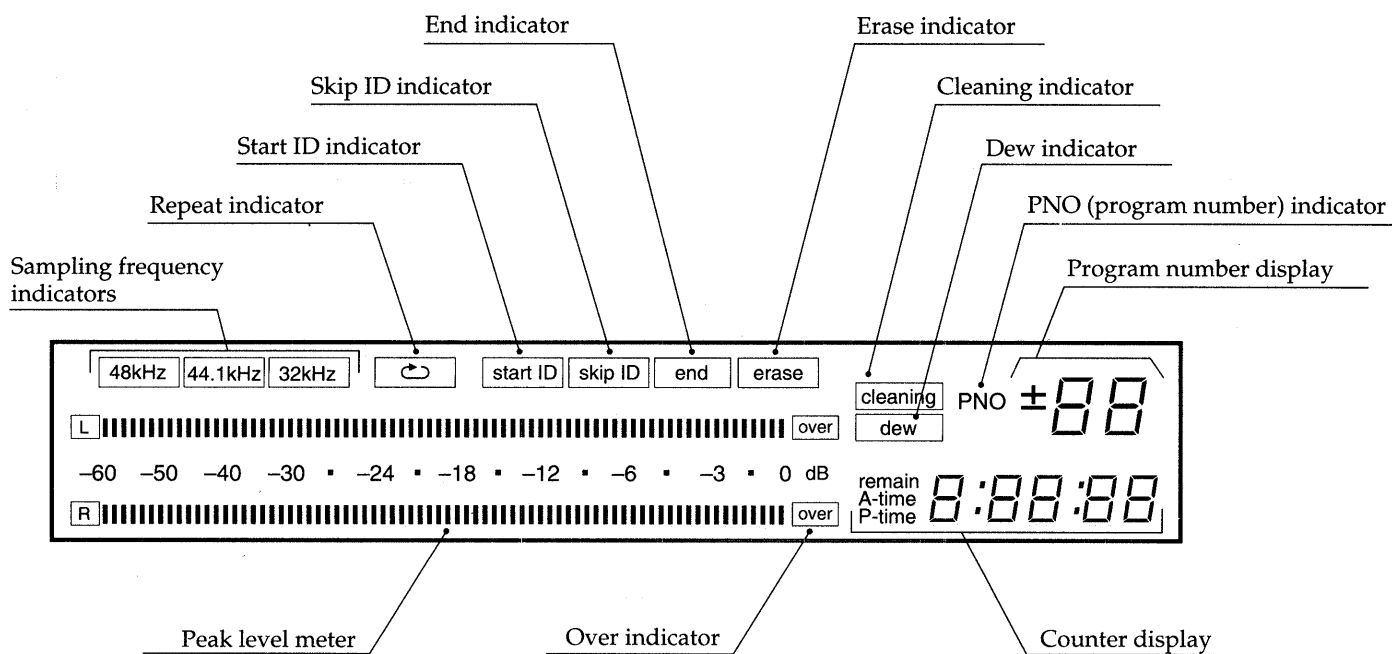


Unexplained buttons on the remote control transmitter function identically to their corresponding parts on the SV-3800.

## Front Panel



## Display Panel



# SV-3800 DAT MAINTENANCE CHART

## • REGULAR MAINTENANCE

The purpose of periodic maintenance as recommended is to keep the equipment in the best possible operating condition throughout its useful life. Observance of this maintenance schedule ensures that maximum performance and reliability is obtained from the machine.

Regular maintenance is necessary because the DAT Recorder is a high-technology piece of equipment, containing DC motors, head cylinder assemblies, and a complex mechanism. These components deteriorate over time. Dust and dirt can clog the head gap, which affects the sound. In light of this, it is very important that overall maintenance be performed according to the maintenance chart to avoid problems resulting from heavy image. Maintenance should also be performed after any repairs on the equipment.

Maintenance is particularly recommended for DAT Recorders used in commercial and broadcast applications for several reasons. Installation and application are frequently under less than ideal conditions, such as long usage times and poor environmental conditions. All of this adversely affects the life span and performance of the machine. Regular maintenance assures that the purchaser obtains maximum value for this expenditure.

**Note:** Refer to the hour meter to know when to perform the maintenance.

Part Name	Part Number	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
Upper Cylinder	VEH0460	○	●	○	●	○	●	○	●	○	●
Cylinder Unit	VEG0752	○	○	○	○	○	○	○	○	○	●
S. Load Arm Ass'y	RXL0052										●
T. Load Arm Ass'y	RXL0054										●
Load Cam	RDK0006-1						●				
Capstan Unit	REM0001	○	○	○	○	○	○	○	○	○	●
Post Roller	RXP0008	○	○	○	○	○	○	○	○	○	●
Guide Roller	RXP0027	○	○	○	○	○	○	○	○	○	●
Pinch Roller	1NB0001ZA	○	○	○	○	○	●	○	○	○	○
S. Reel Ass'y	RXR0006										●
T. Reel Ass'y	RXR0007										●
BT Lever	RXL0048										●
Tension Band Ass'y	RXL0036						●				
S. Brake Ass'y	RXL0049						●				
T. Brake Ass'y	RXL0050						●				
Idler Gear	RDG0071										●
Mode Motor Ass'y	REM0009								●		
Mode Cam	RDK0007-1										●
M Gear B	RDG0067										●
Drive Gear Ass'y	RXG0011						●				
Idler Gear (F)	RDG0069										●
Idler Gear (P)	RDG0068										●
Mode SW Ass'y	RES0002						●				
Load SW Ass'y	RES0001										●
Cassette SW	EVQWR4002										●
Earth Terminal	RUS740ZA										●
Loading Motor	MMN-6FBRC8S										●
Belt	SMQ20025										●
Leaf SW	SSPD18										●

● Replacement, ○ Cleaning

## • DAT Head and Tape Transport Cleaning

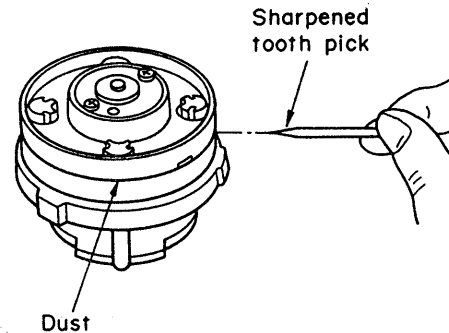
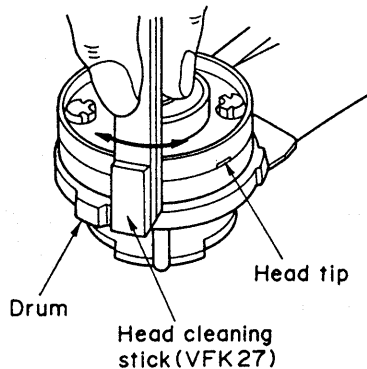
Through normal usage of any tape machine, dirt and debris from the tape accumulates on the heads, which eventually causes performance problems. By using a cleaning cassette regularly, dirt buildup can be minimized, prolonging the life of the tape heads, and also keeping tape posts, tape guides, and the pinch roller clean.

### • CLEANING

1. Play the cleaning cassette (Panasonic Part No. RT-RCLP) for 15-20 seconds.
2. Do not use the same part of the cleaning tape more than once.
3. Clean all tape contact surface, including A/C head upper and lower drum, thoroughly with a soft cloth soaked in alcohol.
4. Clean both heads by gently rubbing in a horizontal direction, as depicted, using a head cleaning stick (VFK27) or a lint free cloth moistened with alcohol.
5. Wipe all tape contact surfaces, including upper and lower drum, with a dry soft cloth to ensure that all residual moisture is removed from the tape contact surfaces.

#### Note:

1. When cleaning the upper drum, hold it secure with your finger tips.
2. Occasionally, dirt or debris may become lodged in the air bearing channels that are cut in the upper drum's surface. This can be removed by gently dislodging it with a sharpened toothpick.
3. Modest amounts of solvent are used. Excess alcohol will dilute and remove the bearing lubricant in the capstan motor and rotary guides.



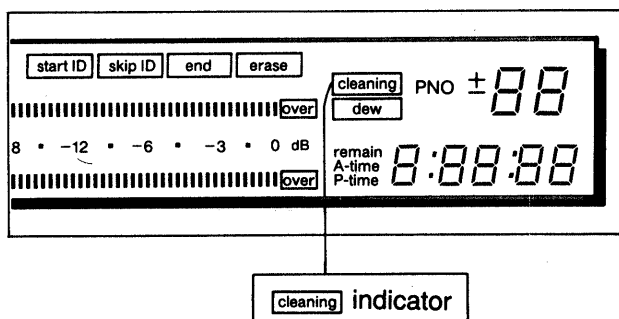
### • IMPORTANCE

Check the Error Rates at several points in the tape and average the values. If the Error Rates increase to around 300, a Panasonic Head Cleaning Tape can be used as follows: Play the cleaning tape through the SV-3800 for approximately 15~20 seconds, and remove it.

DO NOT REWIND the cleaning tape, since this action might very well spread previously removed dirt and dust onto an otherwise clean head and transport. After the Head Cleaning Tape has been used up, dispose of it properly and start to use a new one.

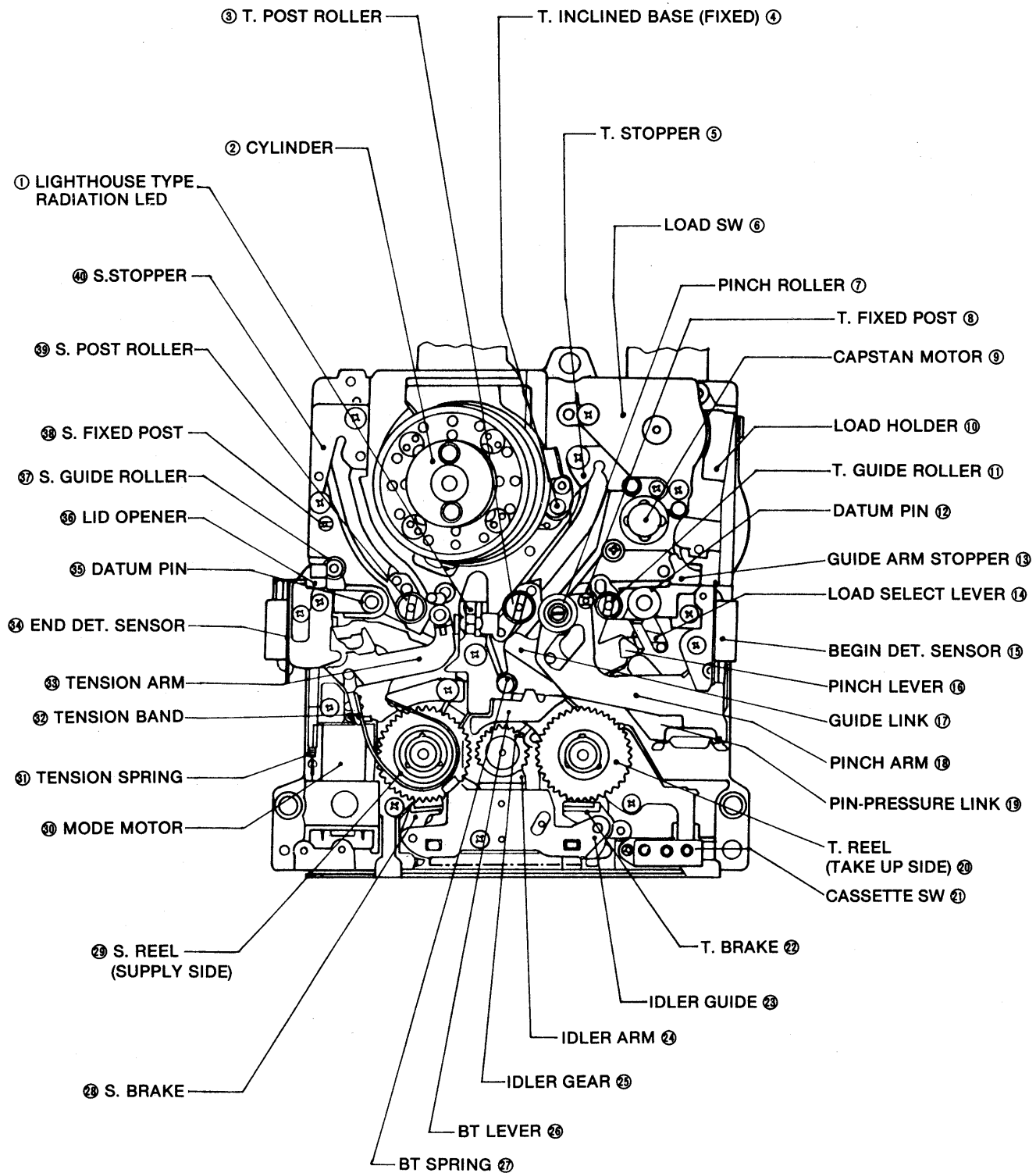
If the DAT heads become very contaminated with dirt and dust, the CLEANING indicator within the display panel will flash. In this case, use a Head Cleaning Tape as described above.

- If playback quality improves after cleaning, but then deteriorates immediately after recording or playing back several times, the cassette tape has probably reached its useful lifetime. In this case, use a new tape.
- If sound quality does not improve even after cleaning, consult your dealer.
- Cleaning tapes cannot be used for recording or playback (be sure to read also the operating instructions supplied with the tape).

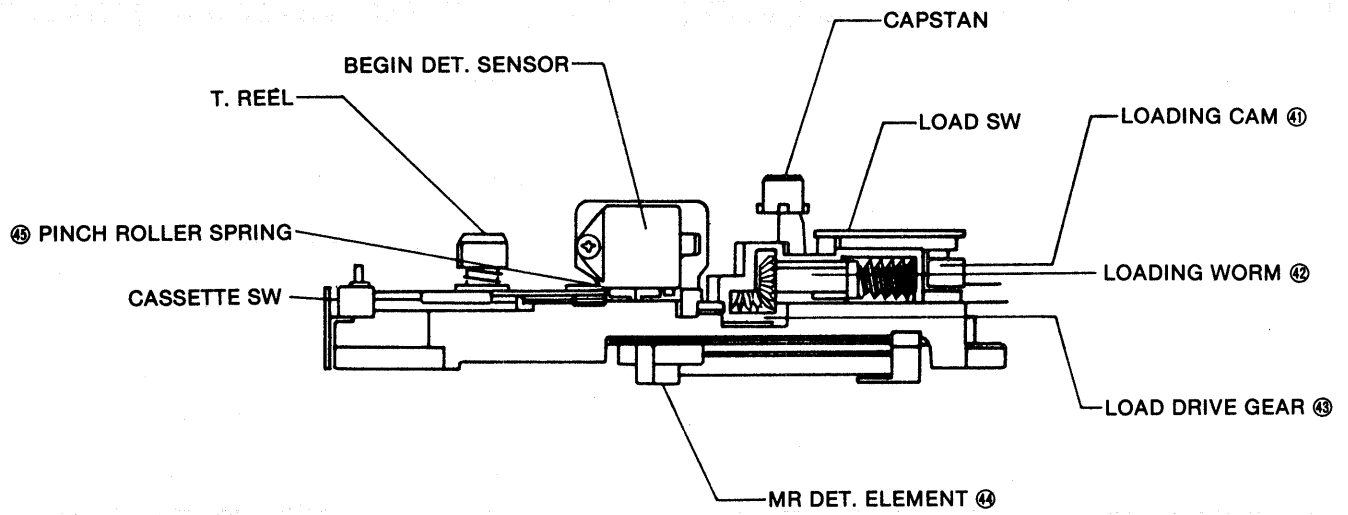


# • MECHANISM COMPONENT LAYOUT

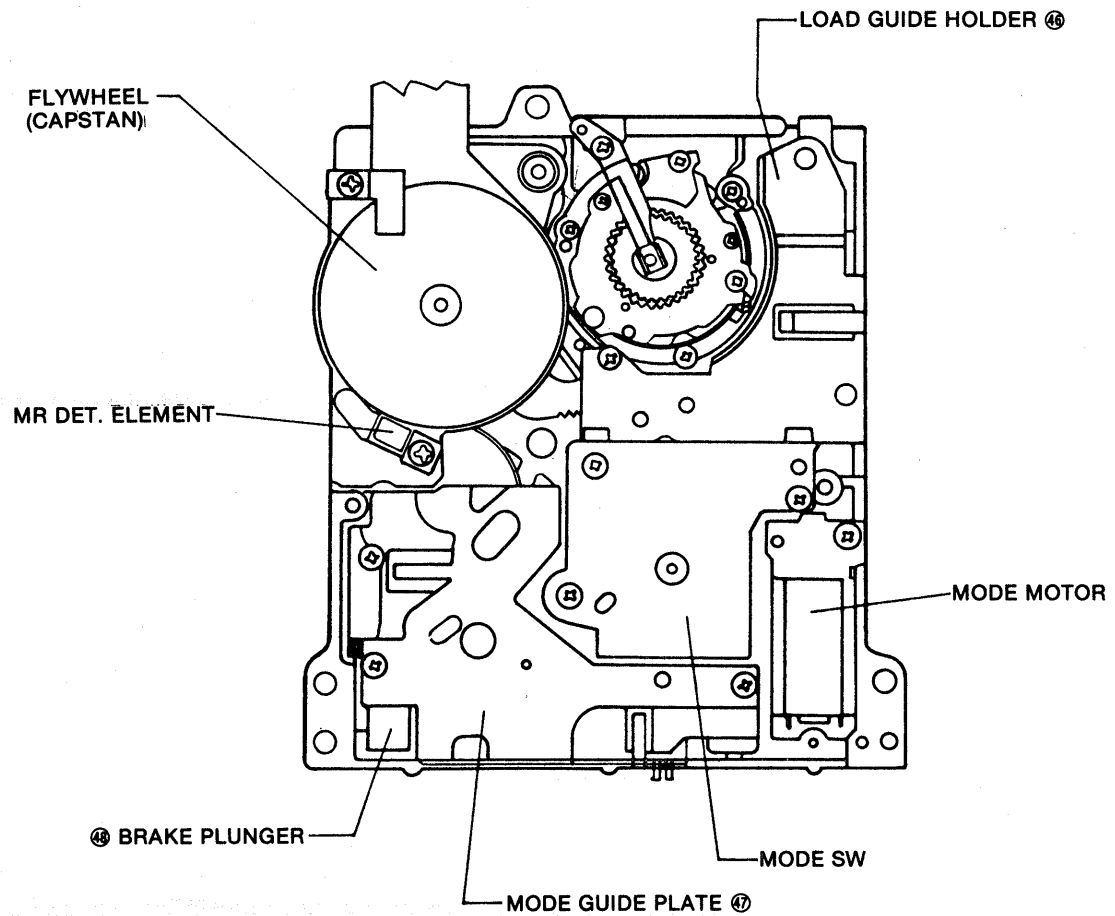
## • Top view



## • Side view



## • Bottom view



# • MECHANISM CONTROLS AND FUNCTIONS

① LIGHT HOUSE TYPE RADIATION LED	Lighthouse-shaped, LEDs blink at start and end of tape.	②⑨ IDLER GEAR	Transmits movement to S and T reels in accordance with mode.
② CYLINDER	30mm in diameter, 40 FG pulses, maintains specified speed of 1000 to 3000rpm.	③⑩ BT LEVER	Applies back tension to T reel during review.
③ T. POST ROLLER	Regulates tape travel position (upper edge).	④⑪ BT SPRING	Provides pressure for back tension lever.
④ T. INCLINED BASE (FIXED)	Regulates angle (90°) at which tape is wound around cylinder (stationary).	⑤⑫ S. BRAKE	Presses brake shoe against S reel base gear to perform braking.
⑤ T. STOPPER	Determines position of T post roller base during loading.	⑥⑬ S. REEL (SUPPLY SIDE)	Supply reel base, 64 FG pulses.
⑥ LOAD SW	Two-bit rotary switch, detects loading position.	⑦⑭ MODE MOTOR	6.5V DC motor, switches mode by forward and reverse revolution.
⑦ PINCH ROLLER	Presses against tape during play and review.	⑧⑮ TENSION SPRING	Provides back tension force of tension regulator.
⑧ T. FIXED POST	Regulates tape travel position.	⑨⑯ TENSION BAND	Mounted to tension regulator, applies back tension to S reel base.
⑨ CAPSTAN MOTOR	1.5mm in diameter, 290 FG pulses.	⑩⑰ TENSION ARM	Detects tape condition and applies back tension during play and review.
⑩ LOAD HOLDER	Contains loading drive gear and worm gear, engages and disengages M gear A.	⑪⑱ END DET. SENSOR	Light-receiving element for LED (detection at end of tape).
⑪ T. GUIDE ROLLER	Regulates tape travel position (top edge).	⑫⑲ DATUM PIN	Regulates width and height (left side) during loading of cassette tape.
⑫ DATUM PIN	Regulates width and height (right side) during loading of cassette tape.	⑬⑳ LID OPENER	Opens cassette lid during loading of tape.
⑬ GUIDE ARM STOPPER	Determines position of T guide roller base K during loading.	⑭㉑ S. GUIDE ROLLER	Regulates tape travel position (bottom edge).
⑭ LOAD SELECT LEVER	Switches engagement and disengagement of loading gear in accordance with loading conditions.	⑮㉒ S. FIXED POST	Regulates tape travel (bottom edge).
⑮ BEGIN DET. SENSOR	Light-receiving element for LED (detection at start of tape).	⑯㉓ S. POST ROLLER	Regulates tape travel position (top edge).
⑯ PINCH LEVER	Presses pinch roller against tape during play and review.	⑰㉔ S. STOPPER	Determines position of S post roller base during loading.
⑯ GUIDE LINK	Links T post roller base and guide roller base.	⑱㉕ LOADING CAM	Uses movement transmitted from loading worm to move loading lever.
⑰ PINCH ARM	Comprised of pinch roller and T holding post, presses against the capstan.	㉒㉖ LOADING WORM	Transmits movement of loading drive gear and loading cam.
⑰ PIN-PRESSURE LINK	Connected by the pin pressure spring and the pinch arm.	㉓㉗ LOAD DRIVE GEAR	Transmits movement of M gear A and loading worm, engages and disengages in accordance with mode.
⑳ T. REEL (TAKE UP SIDE)	Take-up reel base, 64 FG pulses.	㉔㉘ MR DET. ELEMENT	Detects magnetic changes (290 pulses) of flywheel.
㉑ CASSETTE SW	Detects cassette information (mistaken erasure, cassette detection).	㉕㉙ PINCH ROLLER SPRING	Mounted to the pinch arm, returns the pinch roller.
㉒ T. BRAKE	Presses brake gear against reel base gear to perform braking.	㉖㉚ LOAD GUIDE HOLDER	Holding cover of the loading arm and loading lever.
㉓ IDLER GUIDE	Holding cover for idler arm and S and T brakes.	㉗㉛ MODE GUIDE PLATE	Holding cover of the various gears, holds the plunger in position.
㉔ IDLER ARM	Moves left or right in accordance with mode condition, transmits movement of counter gear to S and T reels.	㉘㉜ BRAKE PLUNGER	5V, 200mA, switches brakes on and off in accordance with the mode.



## ■ OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURES

### NOTE

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Illustrated screws are equivalent to actual size.
5. Refer the parts No. on the page of "Main component Replacement Procedures", if necessary.

### ● Contents

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page.

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3. Checking for the servo P.C.B. ....15.
4. Checking for the RF P.C.B. ....15,16.

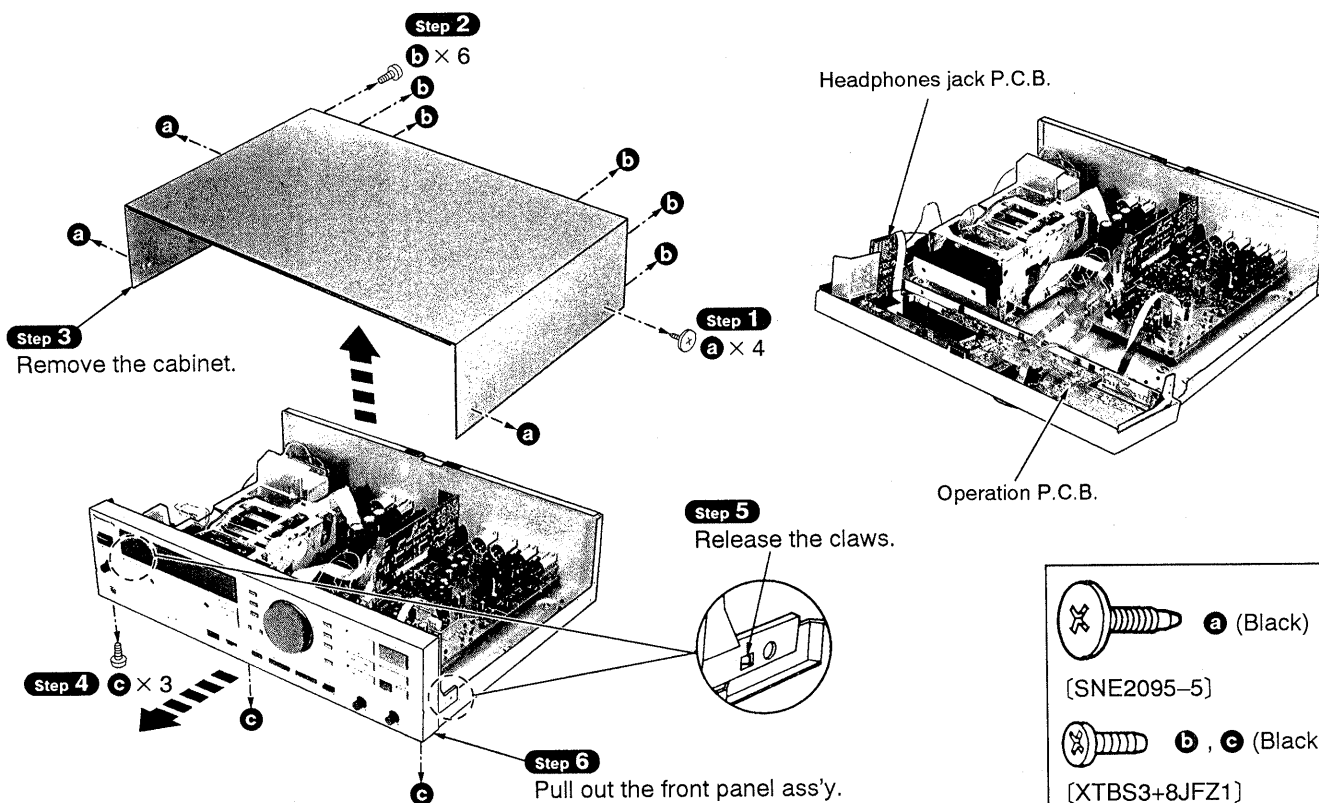
#### •Main Component Replacement Procedures

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## ■ Checking Procedure for each P.C.B.

### 1. Checking for the operation P.C.B. and headphones jack P.C.B.

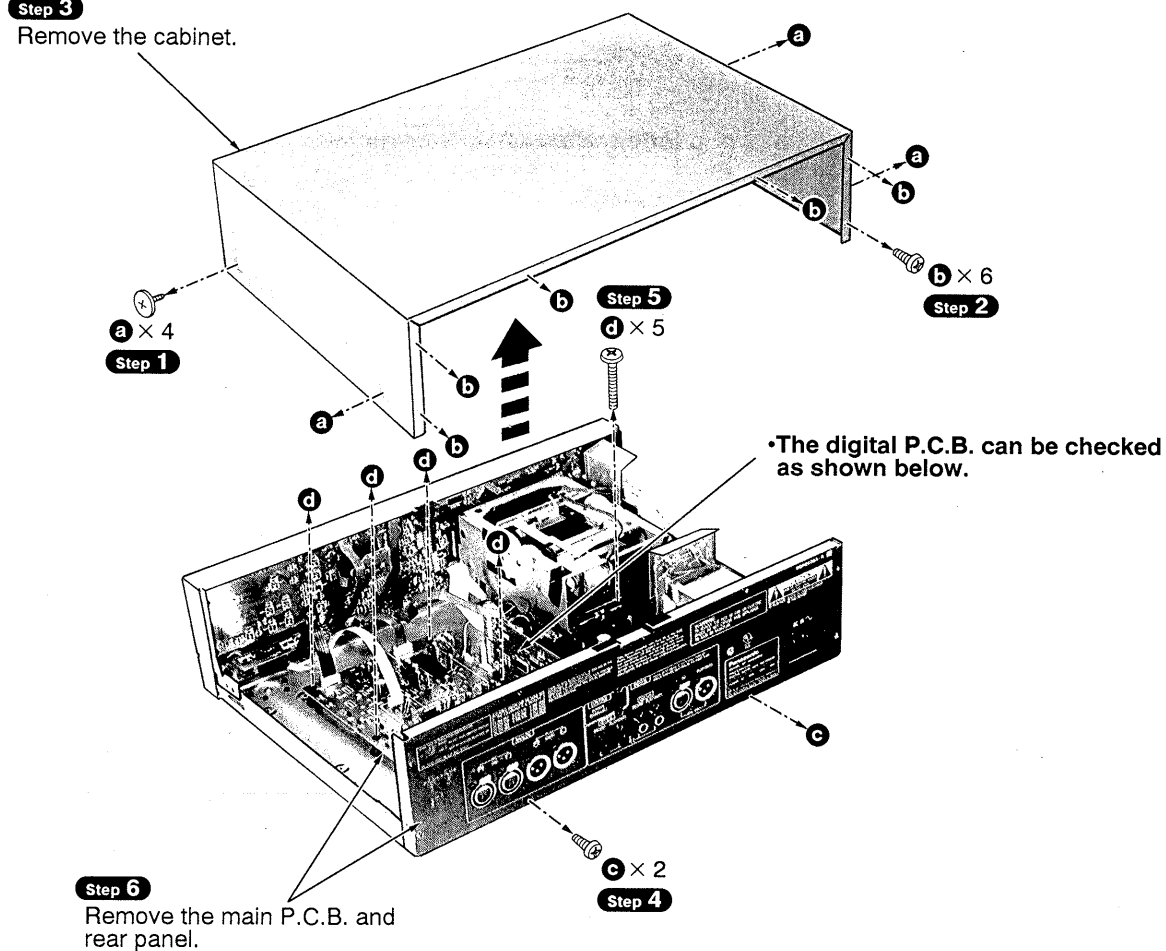
- Check the operation P.C.B. and headphones jack P.C.B. as shown below.



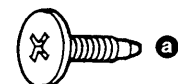
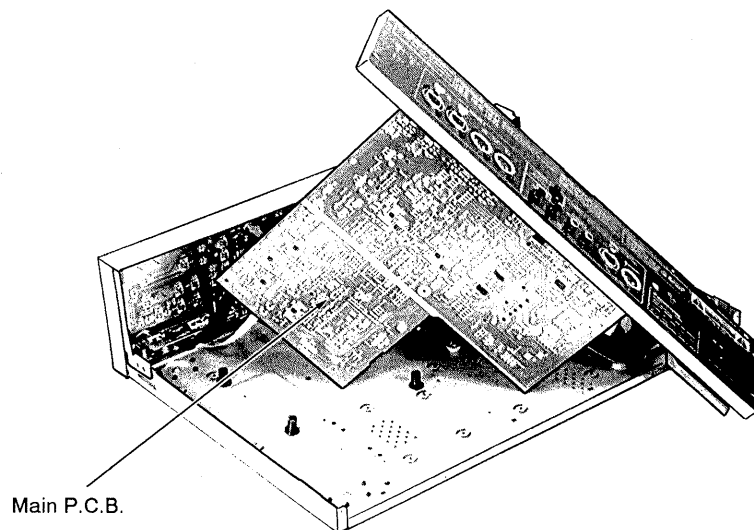
## 2. Checking for the digital P.C.B. and main P.C.B.

### Step 3

Remove the cabinet.



• Check the main P.C.B. as shown below.



[SNE2095-5] (Black)

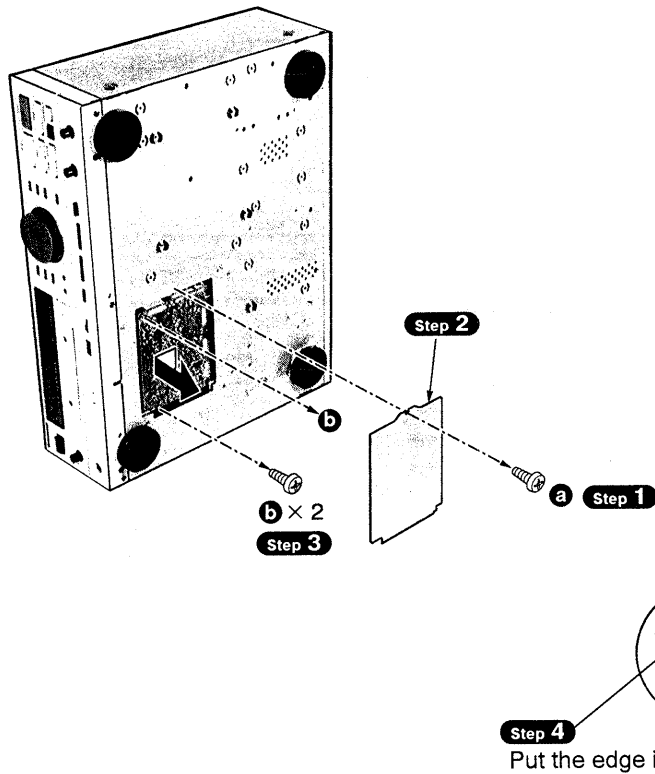


[XTBS3+8JFZ1] (Black)



[XTB3+20JFR] (Red)

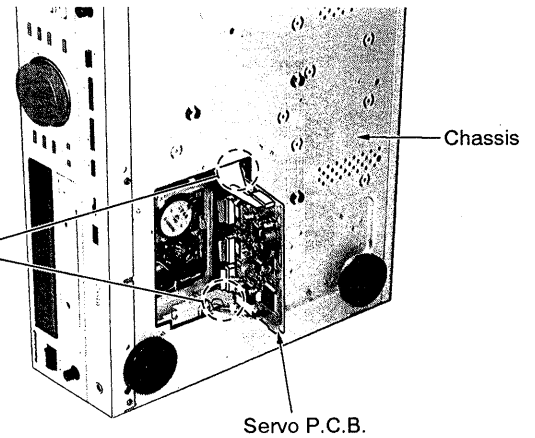
### 3. Checking for the servo P.C.B.



- a** (Black)  
[XTBS3+8JFZ1]
- b** (Black)  
[XTB3+6J]

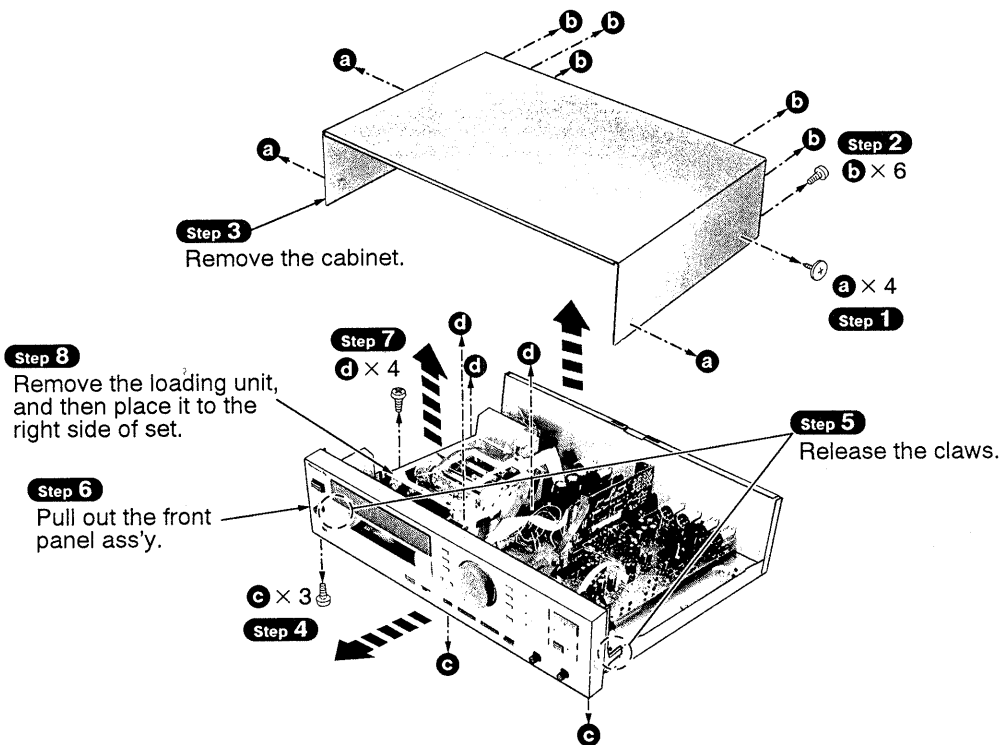
#### NOTE

Take care not to short circuit the servo P.C.B. with chassis.



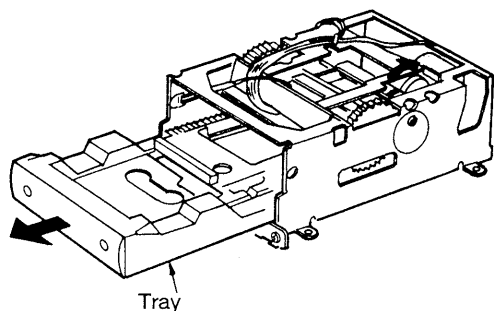
• Check the servo P.C.B. as shown above.

### 4. Checking for the RF P.C.B.



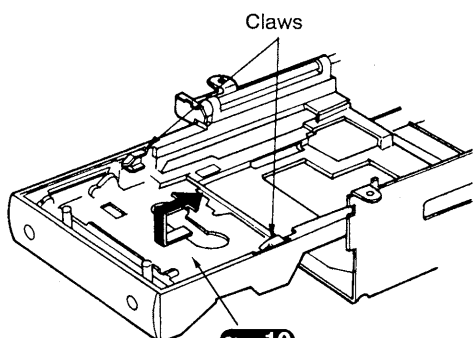
- a**  
[SNE2095-5]
- b**, **c**  
[XTBS3+8JFZ1] (Black)
- d**  
[XTB3+6F]

**Step 9** Rotate the pulley gear, and then move the tray forward.



Tray

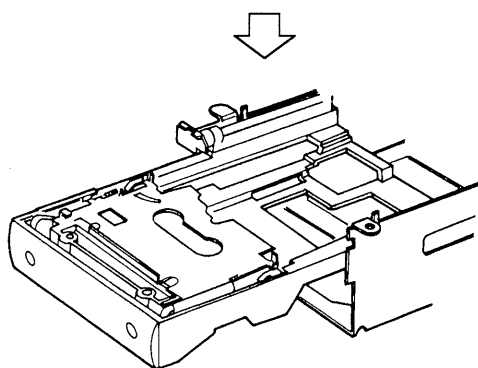
(Upset)



Claws

**Step 10**

Put the slider cassette holder angle on the claws.



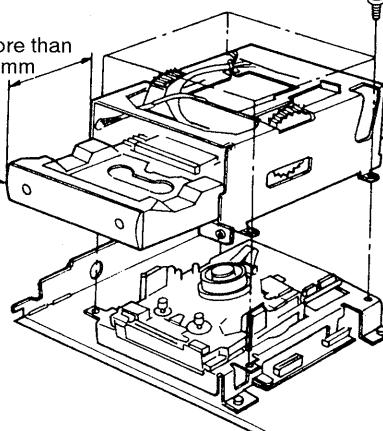
**Caution:** The slider cassette holder angle will be deformed if it is left as is.

### Notice for reassembling the loading unit

**Step 1**

Draw the tray forward more than 50mm.

More than 50mm



**Step 3**

a

Fix with screws, and then put the tray fully.

**Step 2**

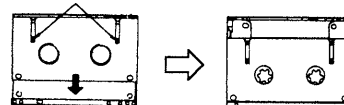
Install the loading unit to the mechanism frame.

Mechanism frame



[XTB3+6F]

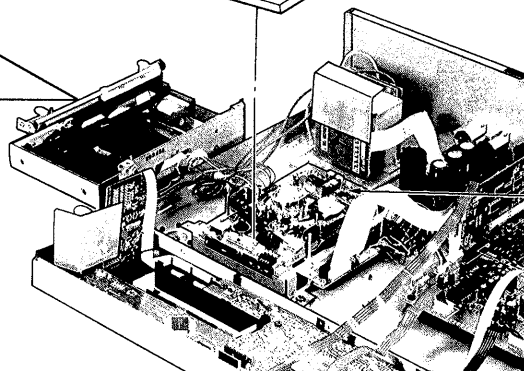
Slider lock



•Unlock the slider lock.

**Step 11**

Place the cassette tape.



RF P.C.B.

•Check and adjust the RF P.C.B. as shown below.

RF P.C.B.

Cassette tape

• Fix the cassette tape with adhesive tape.

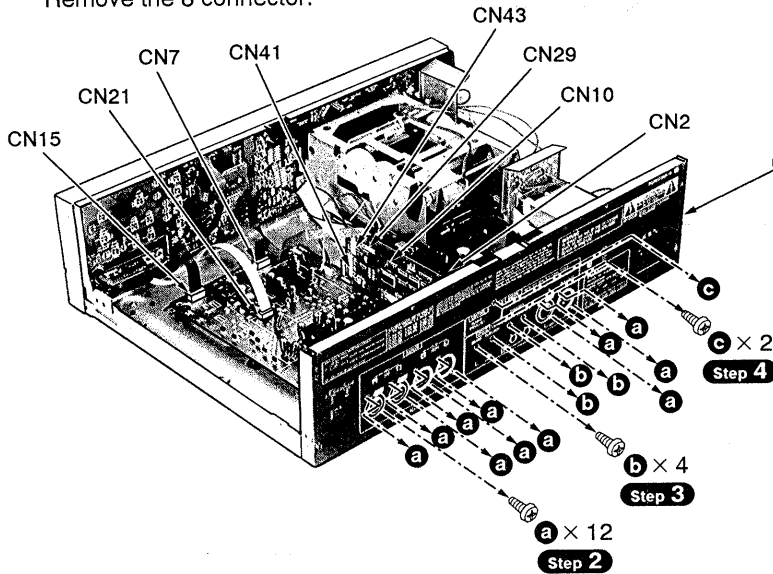
## Main Component Replacement Procedures

### 1. Replacement for the regulator IC

•Follow **Step 1** ~ **Step 5** in item 2 on checking procedure for each P.C.B..

#### Step 1

Remove the 8 connector.

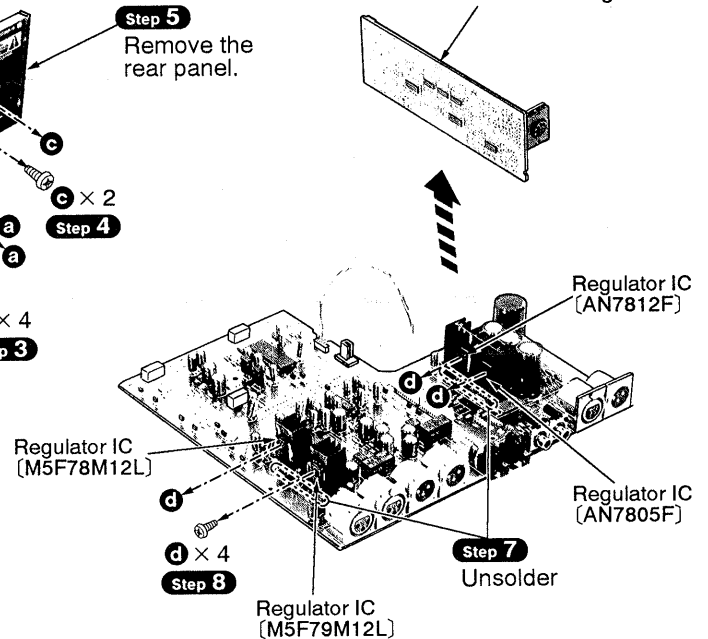


#### NOTE

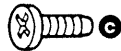
When mounting the regulator IC, apply silicon compound (RFKX0002) to the rear side of regulator IC.

#### Step 6

Remove the digital P.C.B.



a



c

[XSN3+6FZ] (Black)

[XTBS3+8FFZ1](Black)



b



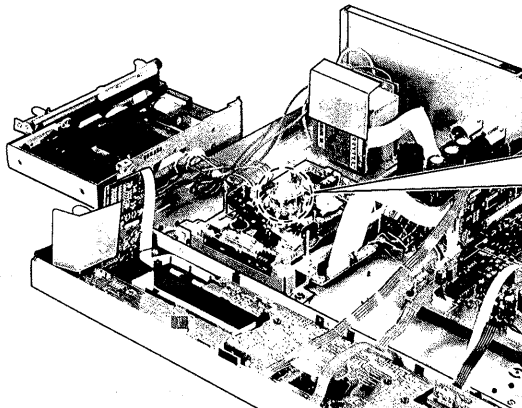
d

[XTBS3+8JFZ1] (Black)

[XTB3+8J]

### 2. Replacement for the upper cylinder

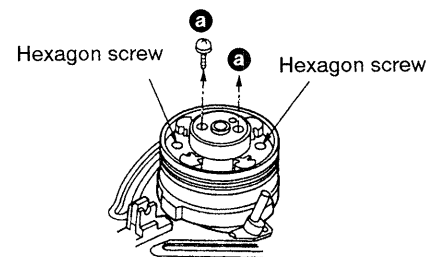
•Follow **Step 1** ~ **Step 8** in item 4 on checking procedure for each P.C.B..



a

[VHD0593]

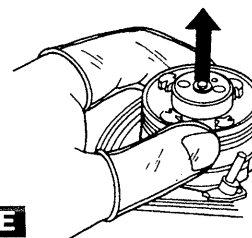
#### Step 1



**NOTE** Please do not touch hexagon screws.

#### Step 2

Pull out the upper cylinder. [VEH0460]

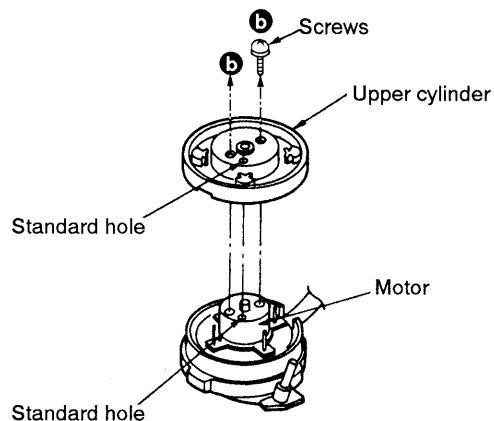


#### NOTE

Do not touch the cylinder (head) with your bare hand; always be sure to wear a glove or other protection.

**Notice for installing the Upper cylinder**

**NOTE** Be sure not to touch the head part.



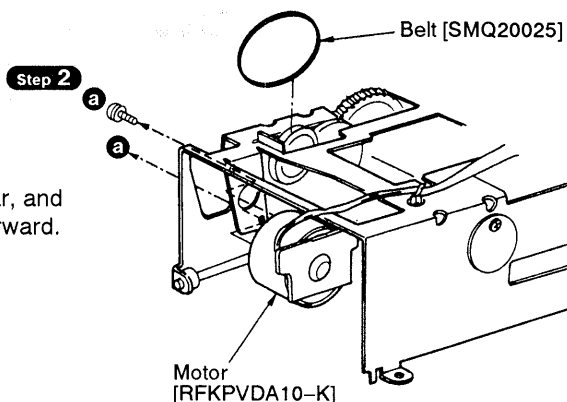
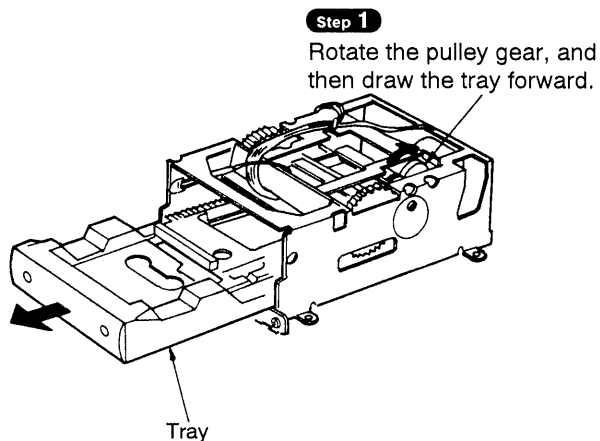
•Mount the upper cylinder matching the motor's standard hole with the cylinder.



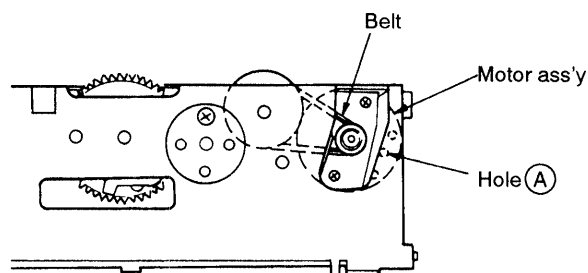
[VHD0593]

**3. Replacement for the belt and motor ass'y**

•Follow **Step 1** ~ **Step 8** in item 4 on checking procedure for each P.C.B..



**■ Installing the motor ass'y**



•Install the motor ass'y so that the hole (A) is located as shown above.



[XYN26+C33]

## MEASUREMENTS AND ADJUSTMENTS

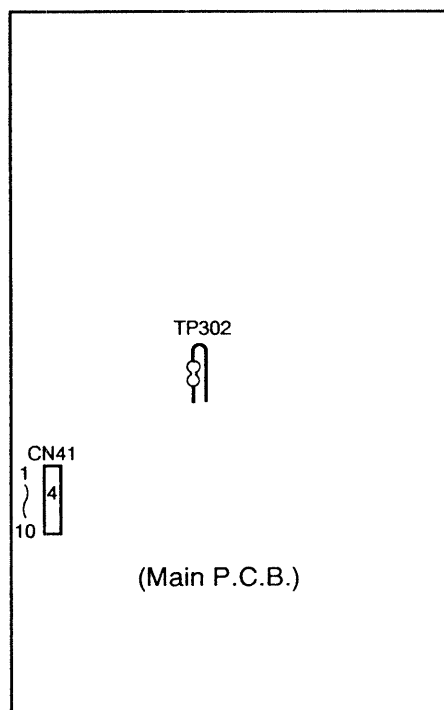
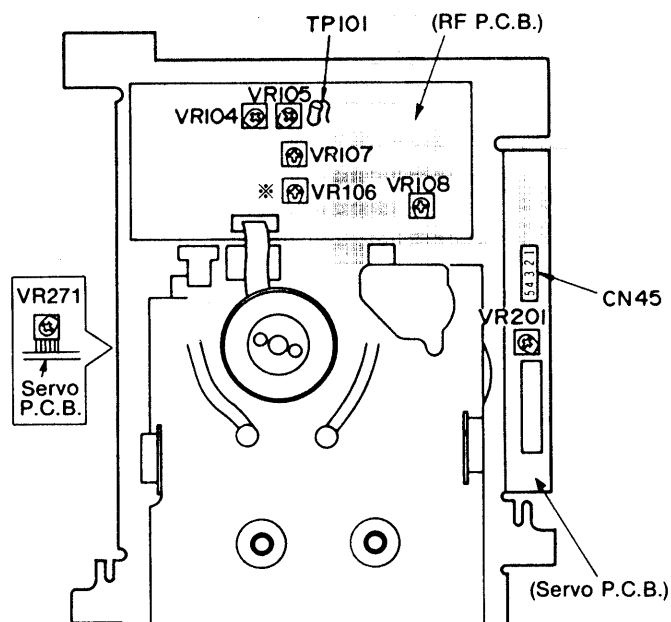
### • PREPARATION

Refer to the "4. Checking for the RF P.C.B." of operation check and main component replacement procedure on page 15.

### • ELECTRICAL ADJUSTMENT

#### • Adjustment points

※ VR106 do not require adjustment; if the VR is replaced or require readjustment, set the dial to the center positions.



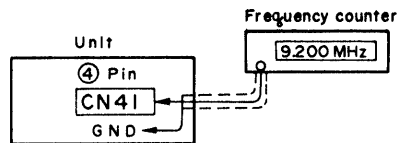
#### Equipment and Tools

- 2-channel 30MHz oscilloscope with external trigger and dual time base
- 2 oscilloscope probes (10 : 1)\*
- Frequency counter
- AF oscillator (OSC)
- Distortion analyser
- DC electronic voltmeter (EVM)
- Post roller adjustment screwdriver  
: SZZV1102C
- Standard test tapes
  - : RD-PG01 (PG reference tape)
  - : RD-ER01 (Error rate tape)
  - : RD-LR02 (Linearity adjustment tape)
- Blank DAT cassette for recording and playback  
: RT-R60P, RT-R90P, RT-R120P
- Standard electrical tools and equipment

\* **NOTE:** The oscilloscope voltage settings in the charts and the waveform examples assume use of the specified 10: 1 probes.

## 1. PLL Free Run Adjustment

1. Connect the frequency counter as shown in figure.
2. Set the power switch to "ON".
3. Open the cassette holder drawer.
4. Adjust VR108 as required until the frequency counter reads  $9.2 \pm 0.2$  MHz.

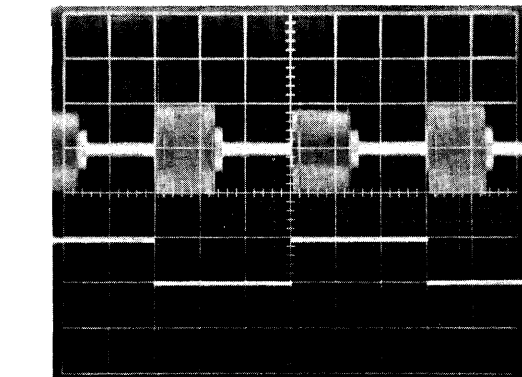
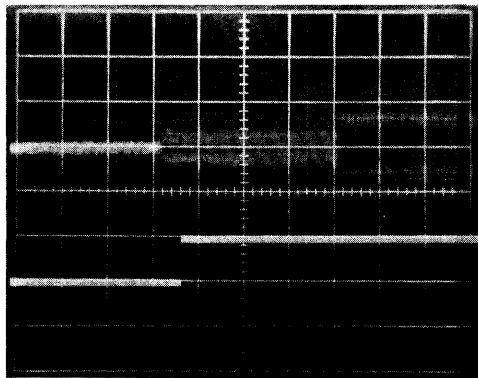


## 2. PG Phase Adjustment

1. Set up the oscilloscope and connect as shown below.

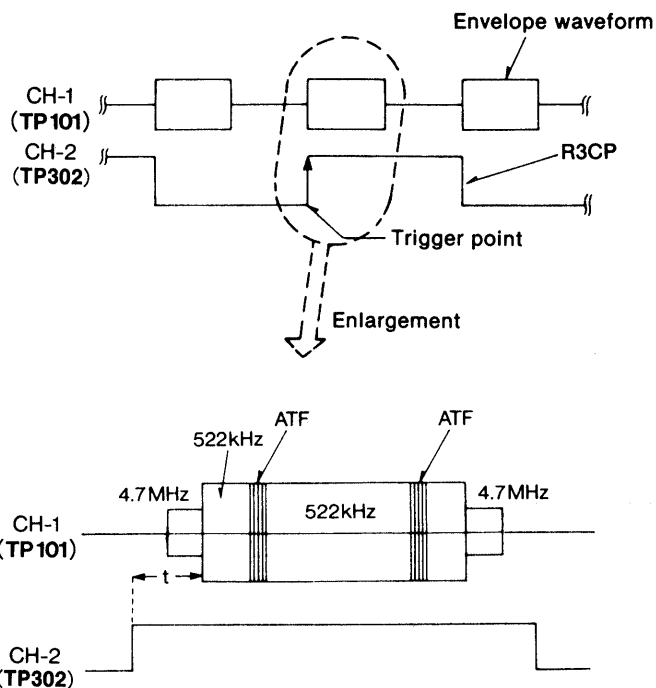
	CH-1	CH-2
Test point	TP101 (RPRF)	TP302 (R3CP)
Volts/Div.	50mV	0.5V
Time/Div.	5msec.	
Delay Time/Div.	50μsec.	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	VR201	

2. Note the "t" time indicated on the PG reference tape (RD-PG01), then load and play the tape.
3. While the tape is being played, the waveform shown on the right should appear.
4. Adjust the delay time for the dual time base to display the leading edge of the CH-2 (R3CP) waveform.
5. The time from the leading edge of R3CP to the leading edge of the 522kHz portion of the RF waveform must be within  $\pm 40\mu\text{sec}$  of the time indicated on the PG reference tape. Adjust VR201 as required, so that the time "t" (in the figure below), falls within specified limits.



### Note:

If the output levels of heads A and B are not equal, the "ATF RF Recording Level Adjustment" described in procedure 4 might be made improperly. Adjust the ATF RF Recording Level by following procedure 4 and then check the output level of the heads again. (At this time, it is not necessary to make adjustment described in procedure 2.)



t: Value ( $\mu\text{sec}$ ) indicated on the standard tape  $\pm 40\mu\text{sec}$ .

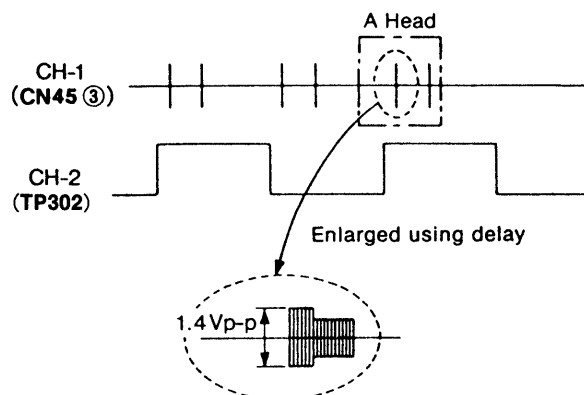
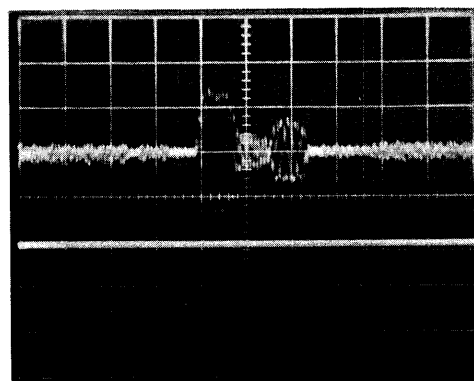


### 3. ATF Gain Adjustment

1. Set up the oscilloscope and connect as shown below.

	CH-1	CH-2
Test point	CN45 ③ (PILOT)	TP302 (R3CP)
Volts/Div.	50mV	0.5V
Time/Div.	5msec.	
Delay	0.1msec.	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	VR107	

2. Load and play the error rate tape (RD-ER01).
3. Adjust the delay time for the dual time base to select and display the PILOT signal with the largest amplitude.
4. Adjust VR107 so that the amplitude of the PILOT signal is  $1.4 \pm 0.2V_{p-p}$ . Check the amplitudes of the other PILOT signals to insure that they are a minimum of  $1.2V_{p-p}$ . If not optimize the adjustment of VR107 for the minimum signal level.



### 4. ATF RF Recording Level Adjustment

**NOTE:** This adjustment should only be made after confirming the playback "ATF Gain Adjustment" in step 3 above. Failing to do so will invalidate this adjustment.

1. Make a "0" level recording:
  - (a) Load a blank tape (RT-R60P etc.) into the unit.
  - (b) Put the unit into RECORD mode.
  - (c) Run the tape, recording for a minimum of 20 to 30 seconds.
  - (d) Rewind the tape to the beginning of the "0" level signal recording.
2. Connect and set up the oscilloscope as follows:

	CH-1	CH-2
Test point	CN45 ③ (PILOT)	TP302 (R3CP)
Volts/Div.	50mV	0.5V
Time/Div.	2msec.	
Delay Time/Div.	0.2msec.	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	VR104: Head A, VR105: Head B	

3. While playing back the blank signal portion of the tape, verify that the signal amplitude falls in the range of  $1.4 \pm 0.2V_{p-p}$ .

**Standard value:  $1.4 \pm 0.2V_{p-p}$**

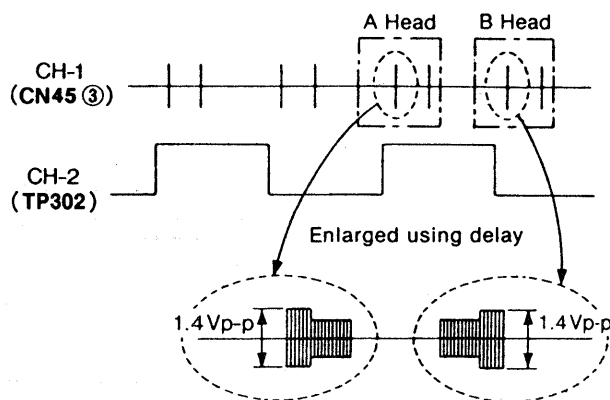
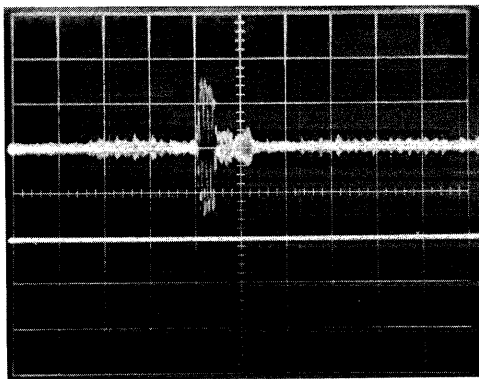
4. If the ATF signal is not within specification press the stop button and adjust VR104 and VR105 accordingly. Making finer adjustments as the trials approach the specified level.

LEVEL/HEAD	A: VR104	B: VR105
More than 1.6V	Turn ⤵	Turn ⤵
Less than 1.4V	Turn ⤴	Turn ⤴

After making the adjustment, make another blank signal recording, on a different portion of the tape (use the END SEARCH feature), for 20 to 30 seconds. Rewind the tape to the beginning of the new recording and repeat from step 3 until the specification is met.

**Note:**

It is necessary to use a different portion of the tape for each trial because DAT does not erase the original signal, it "over writes" the new signal. Using a new portion of the tape will prevent maladjustment due to incomplete "over write" of the previously recorded signal.



## 5. BOT/EOT Detection Sensitivity Verification and Adjustment

1. Make sure that the tape stops with the leader portion (the beginning and ending portion).

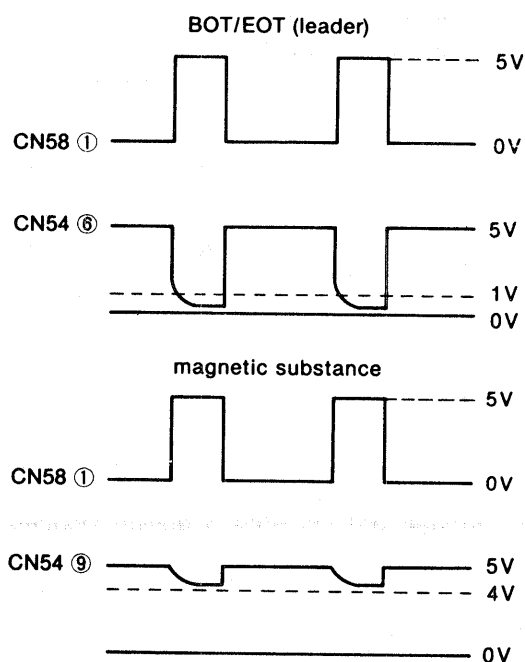
※ If the tape does not stop at the leader, make adjustment by following procedure outlined below.

① Insert a blank tape into the tape compartment of the set and press the playback button at the end of the tape.

② Set up the oscilloscope and connect as shown below.

	CH-1	CH-2
Test point	CN54 ⑥ (BOT/EOT) ⑨ (magnetic substance)	CN58 ①
Volts/Div.	0.2V	0.2V
Time/Div.	2msec.	
Delay	—	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	VR271	

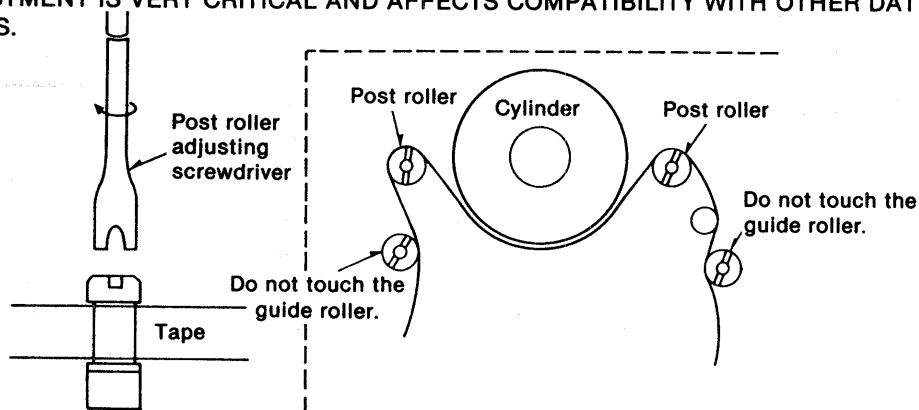
③ Adjust the amplitude of waveform to less than 1V at the magnetic substance and more than 4V at the leader on VR271.



## 6. Linearity Adjustment

**CAUTION:** ONLY THE POST ROLLERS ARE USED FOR THE LINEARITY ADJUSTMENT. DO NOT ADJUST THE GUIDE ROLLERS.

THIS ADJUSTMENT IS VERY CRITICAL AND AFFECTS COMPATIBILITY WITH OTHER DAT RECORDERS.



1. Connect and set up the oscilloscope as follows:

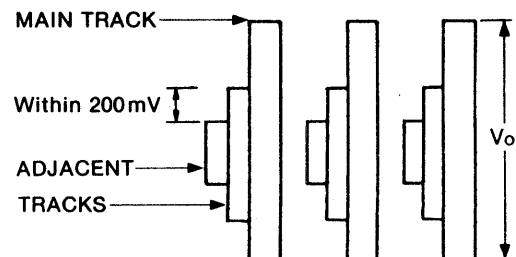
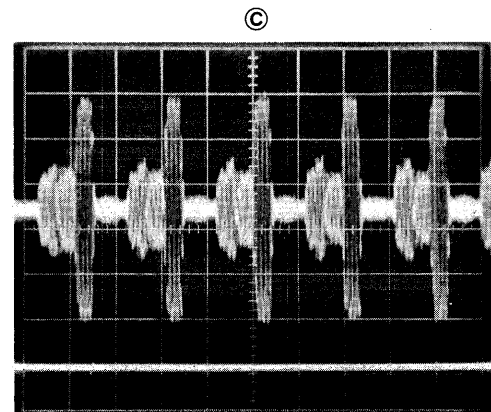
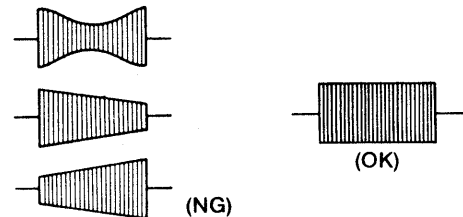
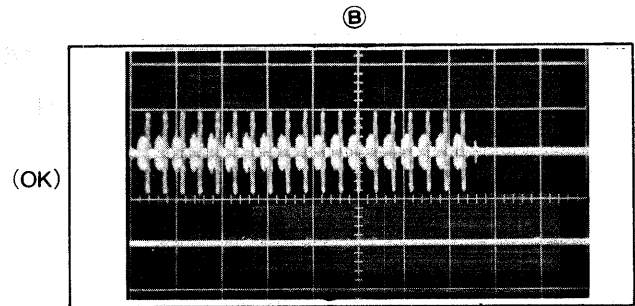
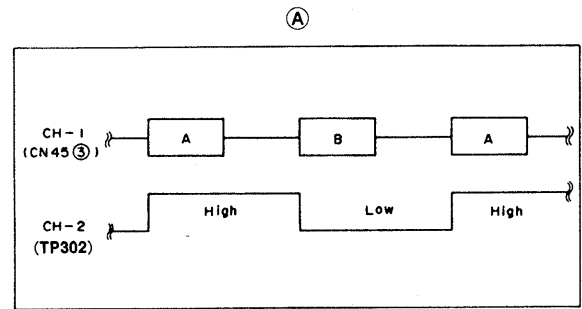
	CH-1	CH-2
Test point	CN45 ③ (PILOT)	TP302 (R3CP)
Volts/Div.	0.2V	2.0V
Time/Div.	Ⓐ 5msec. Ⓑ 1msec. Ⓒ 0.2msec.	
Delay Time/Div.	—	
Trig.	CH-2	
AC-GND-DC	AC	DC
Adjustment point	Post rollers (only)	

- Load and play the linearity adjustment tape (RD-LR02). Please use the recorded signal portion on tape (after 600 count from beginning of tape)
- Use the leading edge of the CH-2 (R3CP) waveform to trigger the oscilloscope to monitor the head "A" side of the RF signal envelope.
- While the tape is playing, gradually adjust the height of the POST ROLLERS until the RF envelope (B) is rectangular.

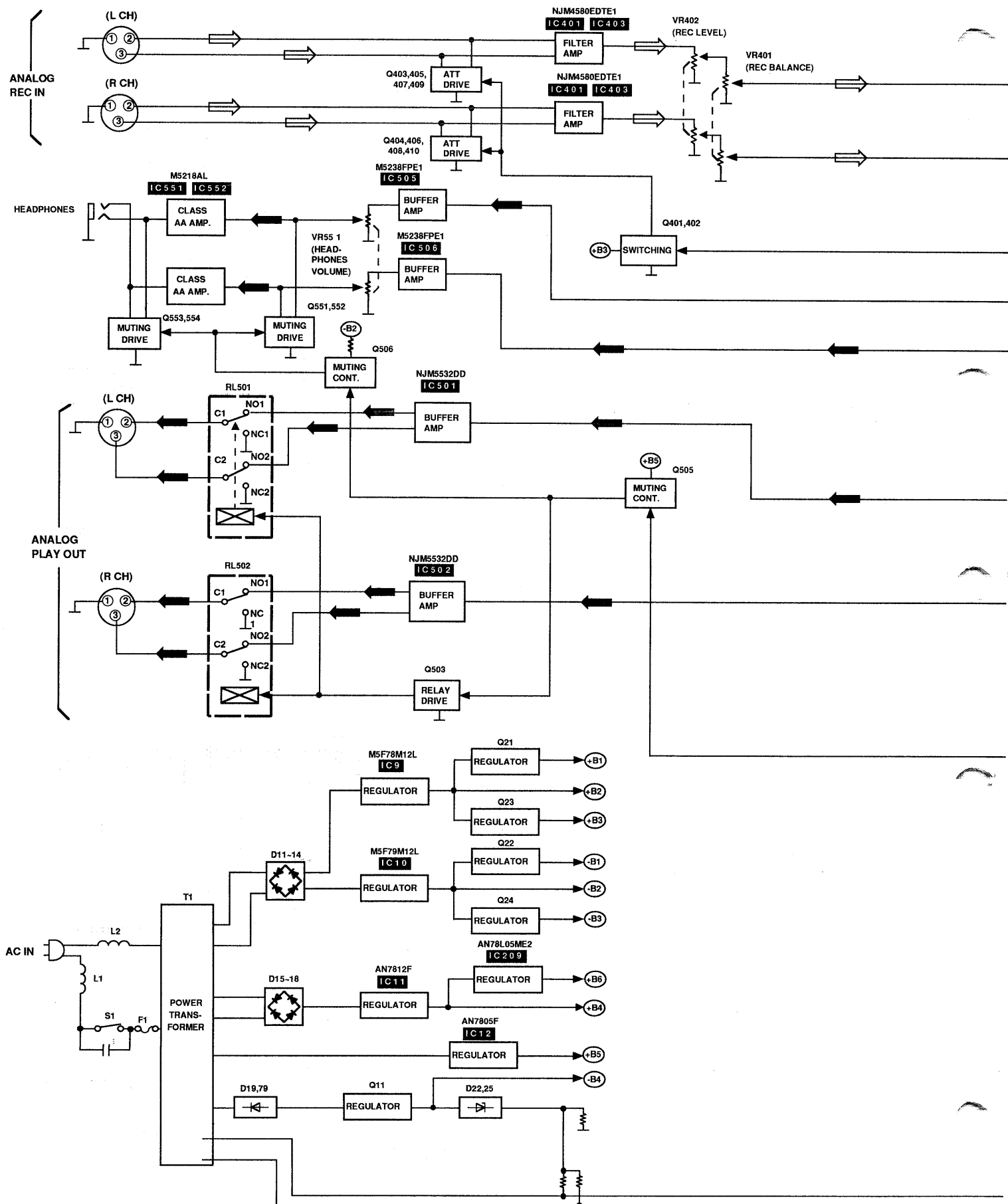
**CAUTION 1:**  
ADJUSTMENTS MUST BE MADE VERY GRADUALLY.

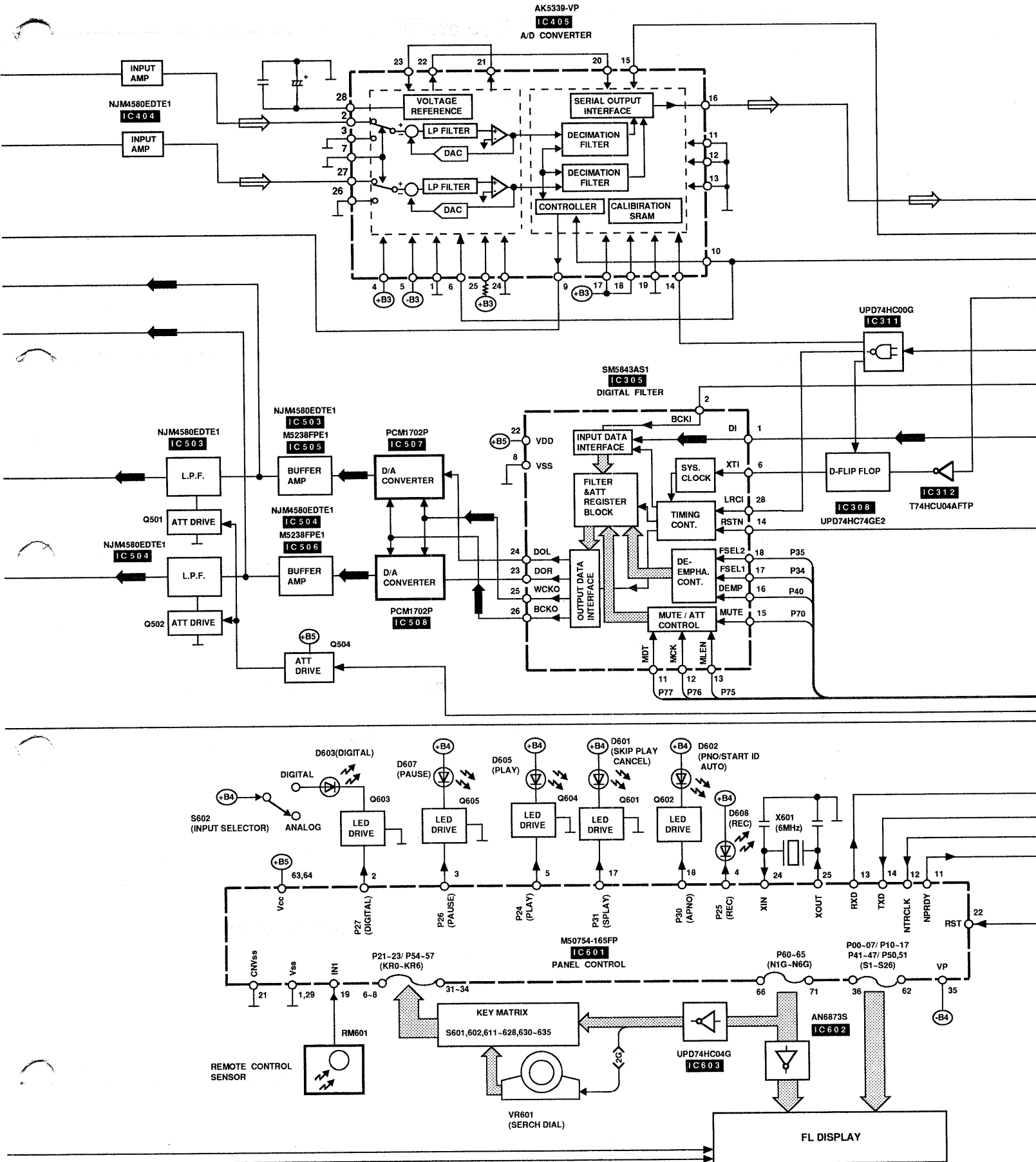
**CAUTION 2:**  
DO NOT "OVER ADJUST" the POST ROLLERS. It is unlikely that the POST ROLLERS will require more than a QUARTER of a turn in either direction to make the waveform rectangular.

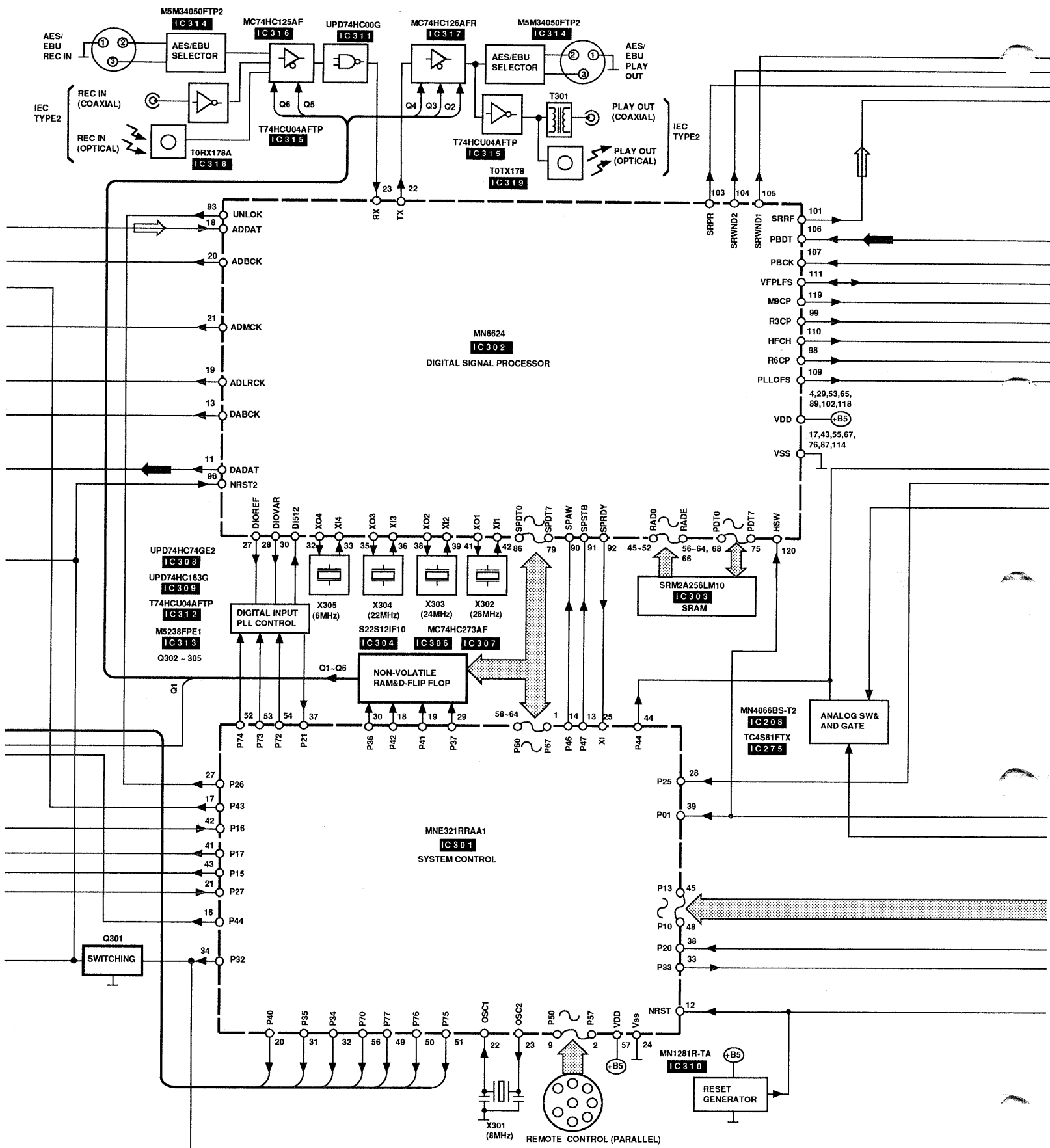
- Adjust VR107 so that the amplitude ( $V_0$ ) of the PILOT waveform ③ is 1.0Vp-p.
- On the PILOT signal waveform ③, verify that the amplitude difference between adjacent tracks falls within 200mV (See figure below). If not, adjust the post rollers.
- Play the standard test tape (RD-ER01), and do "PG Phase adjustment" and "ATF gain adjustment" again.

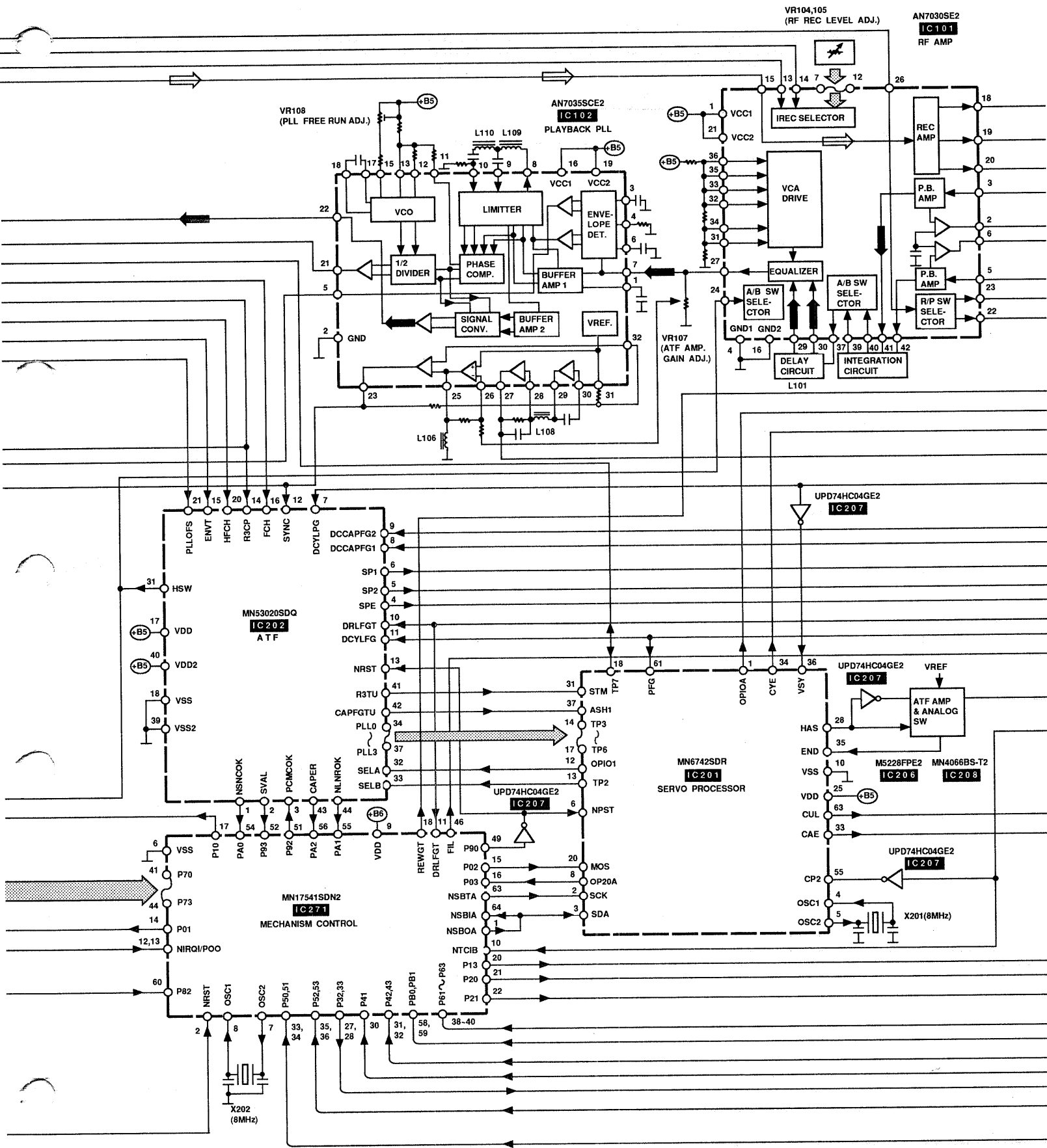


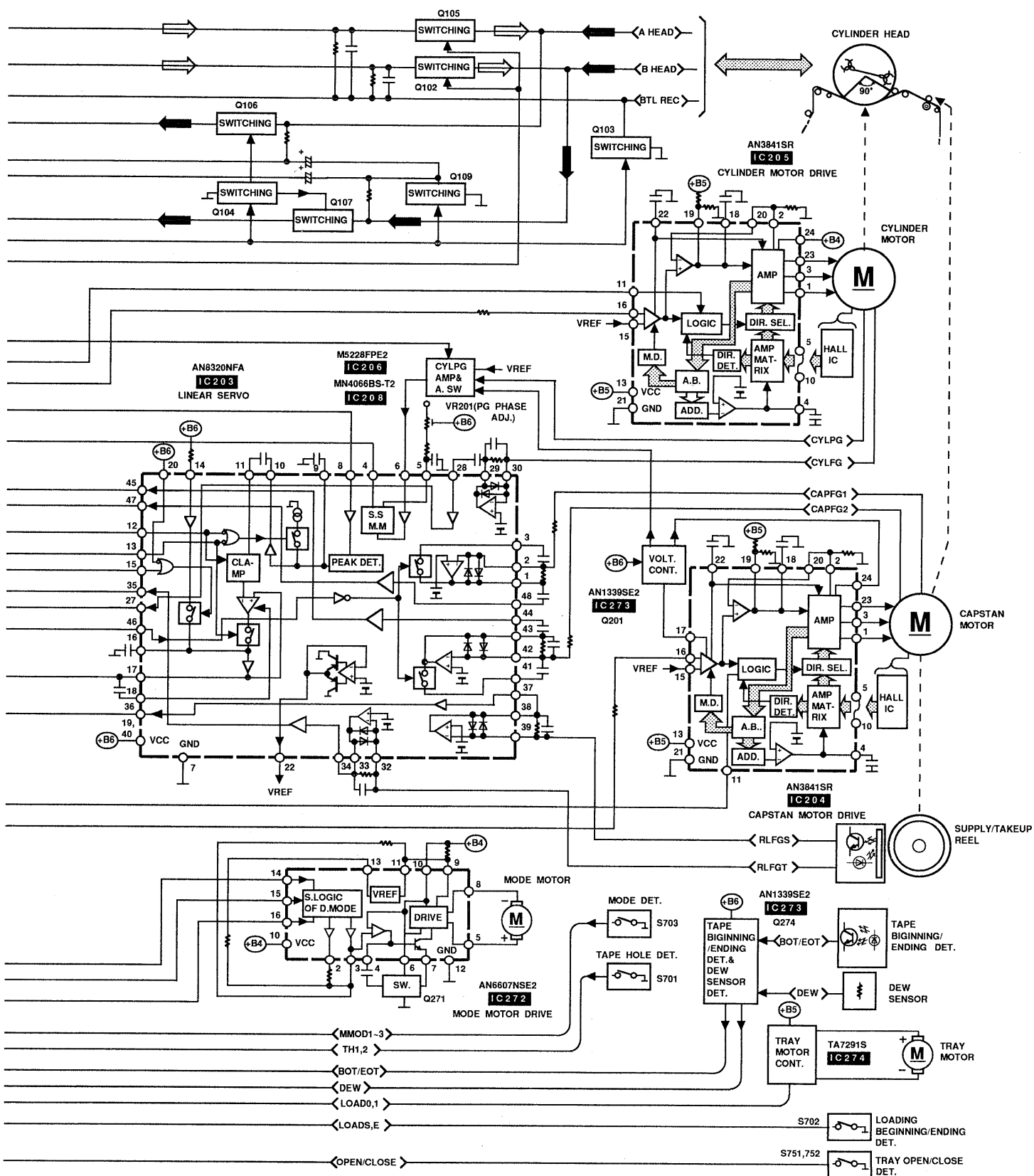
# BLOCK DIAGRAM













Notes: ● Playback signal.  
● Recording signal.







# SCHEMATIC DIAGRAM (Parts list on pages 76~81.)

(This schematic diagram may be modified at any time with the development of new technology.)

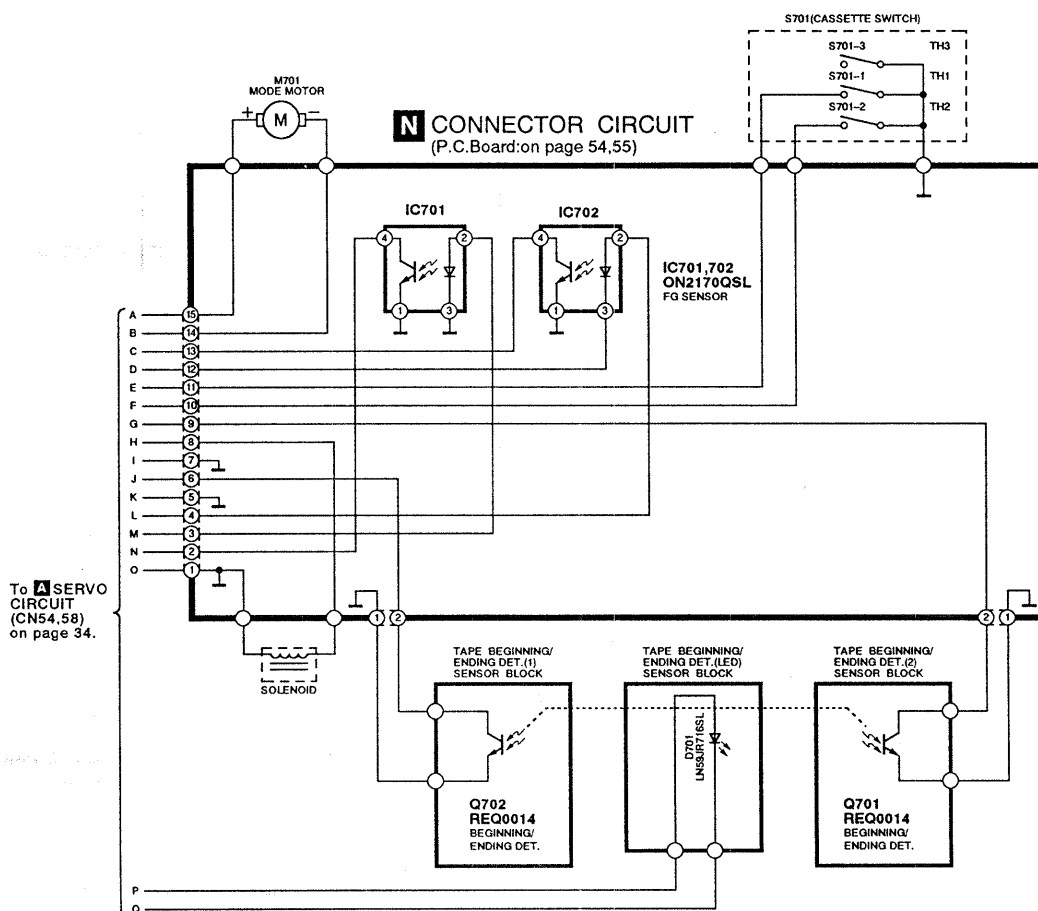
## Note :

- **S1** : Power switch (POWER).
- **S601** : Sampling frequency selector (SAMPLING FREQUENCY) (44.1kHz ↔ 48kHz).
- **S602** : Input selector switch (INPUT).  
(  DIGITAL/  ANALOG).
- **S611** : ID erase switch (ID ERASE).
- **S612** : End search switch (END SEARCH).
- **S613** : Start ID switch (START ID).
- **S614** : Skip ID switch (SKIP ID).
- **S615** : End switch (END).
- **S616** : Counter reset switch (COUNTER RESET).
- **S617** : Renumber switch (RENUMBER).
- **S618** : Rew/rev switch (REW/REV).
- **S619** : FF/cue switch (FF/CUE).
- **S620** : Fade out switch (FADE OUT).
- **S621** : Fade in switch (FADE IN).
- **S622** : PNO/start ID auto switch (PNO/START ID AUTO).
- **S623** : Counter mode switch (COUNTER MODE).
- **S624, 625** : Skip switches (SKIP).  
[S624 ◀◀, S625 ▶▶]
- **S626** : Pause switch (PAUSE).
- **S627** : Record switch (REC).
- **S628** : Auto rec mute switch (AUTO REC MUTE).
- **S630** : ID write switch (ID WRITE).
- **S631** : Play switch (PLAY).
- **S632** : Stop switch (STOP).
- **S633** : Skip play cancel switch (SKIP PLAY CANCEL).

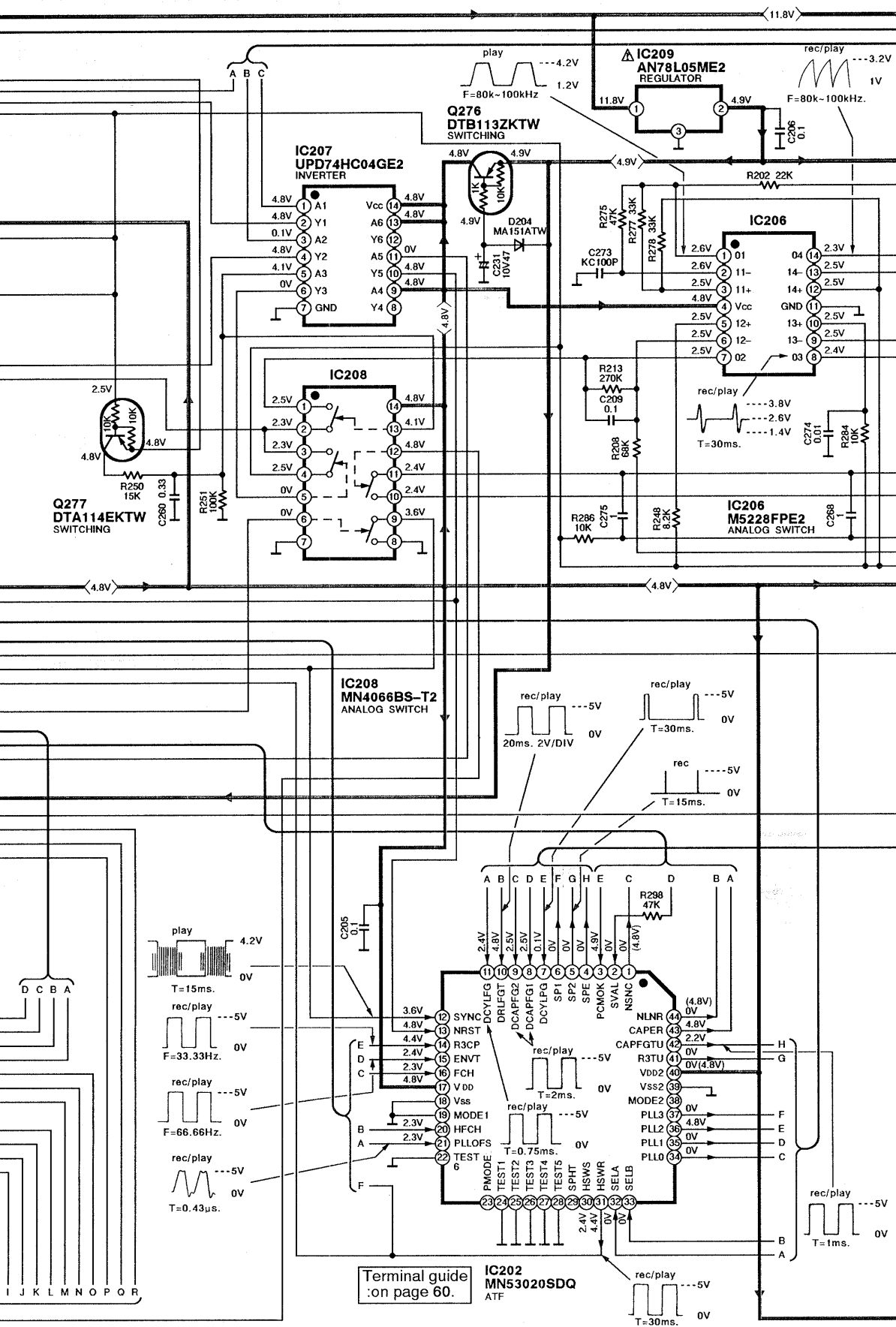
- **S634** : Music scan switch (MUSIC SCAN).
- **S635** : Open/close switch (OPEN/CLOSE).
- **S751** : Cassette tray open detection switch.
- **S752** : Cassette tray close detection switch.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.  
( ).....Voltage values at recording mode.  
For measurement us EVM.
- Important safety notice  
Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- (  ) indicates +B (bias).
- (  ) indicates -B (bias).
- (  ) indicates the flow of the playback signal.
- (  ) indicates the flow of the recording signal.

## \* Caution!

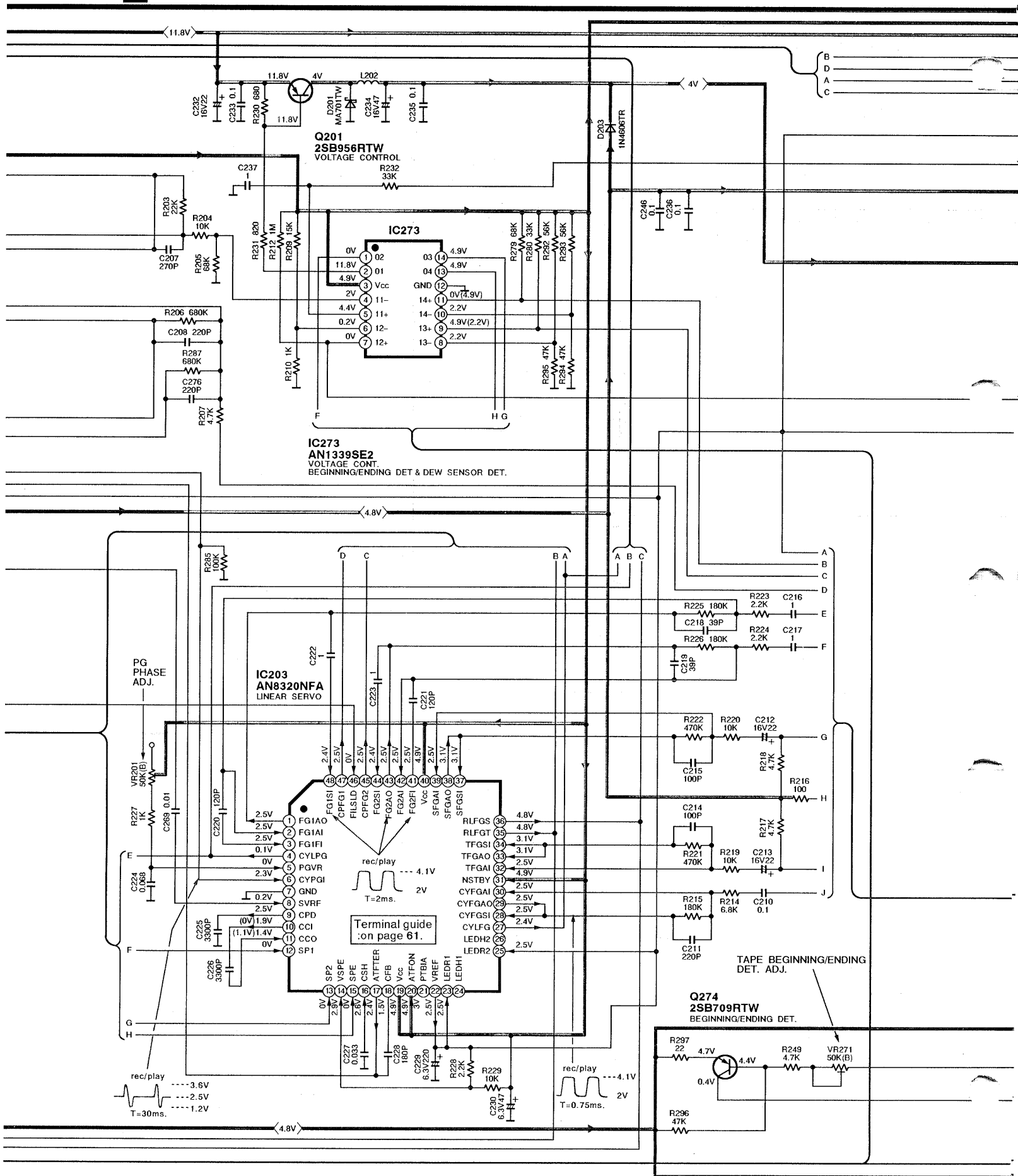
IC and LSI are sensitive to static electricity.  
Secondary trouble can be prevented by taking care during repair.  
\* Cover the parts boxes made of plastics with aluminum foil.  
\* Ground the soldering iron.  
\* Put a conductive mat on the work table.  
\* Do not touch the legs of IC or LSI with fingers directly.

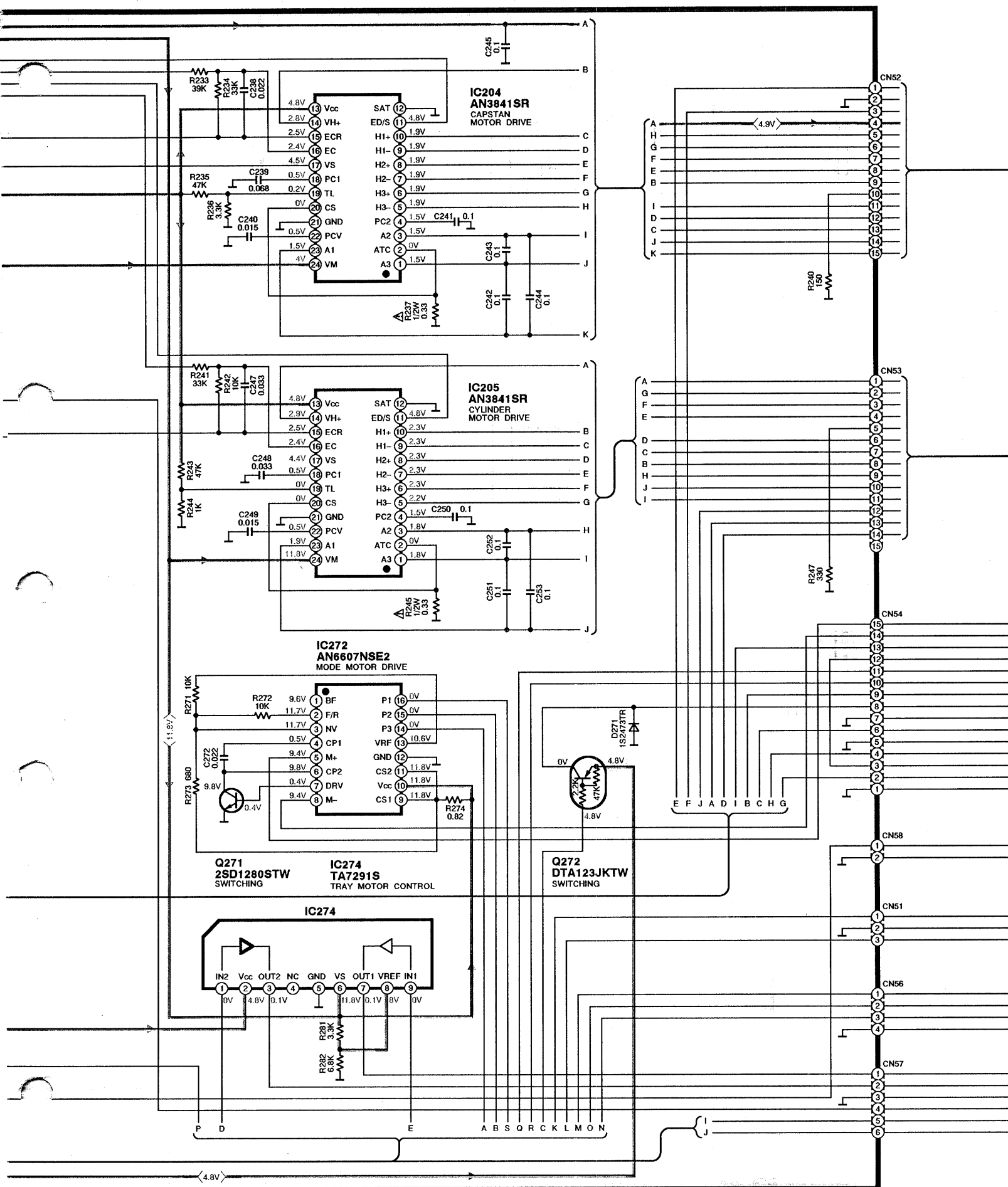






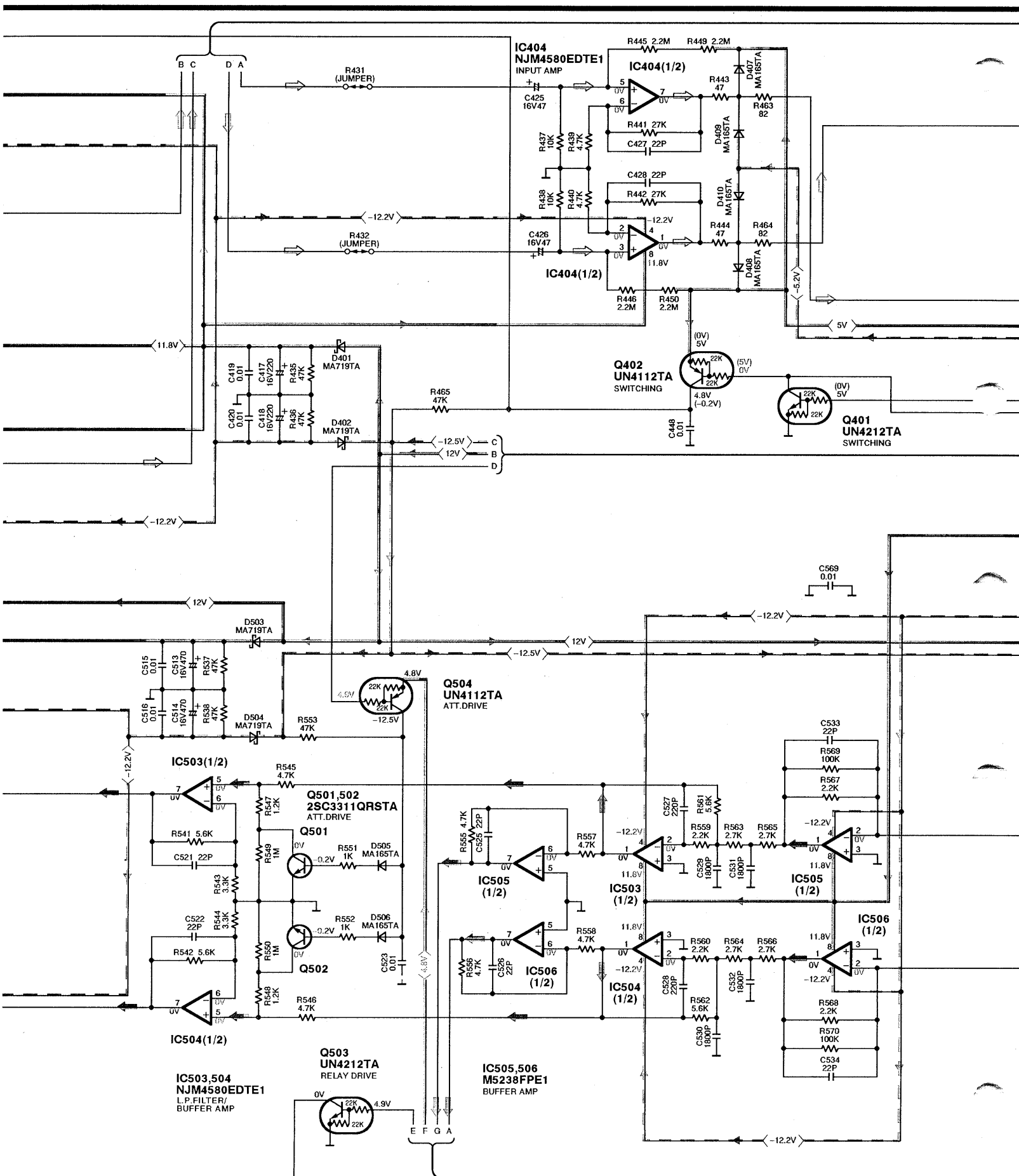
## A SERVO CIRCUIT (P.C.Board: on pages 50,51)



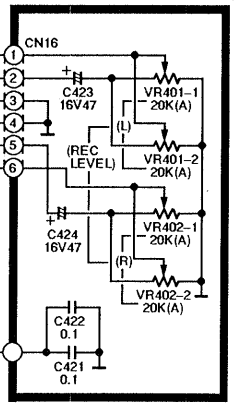
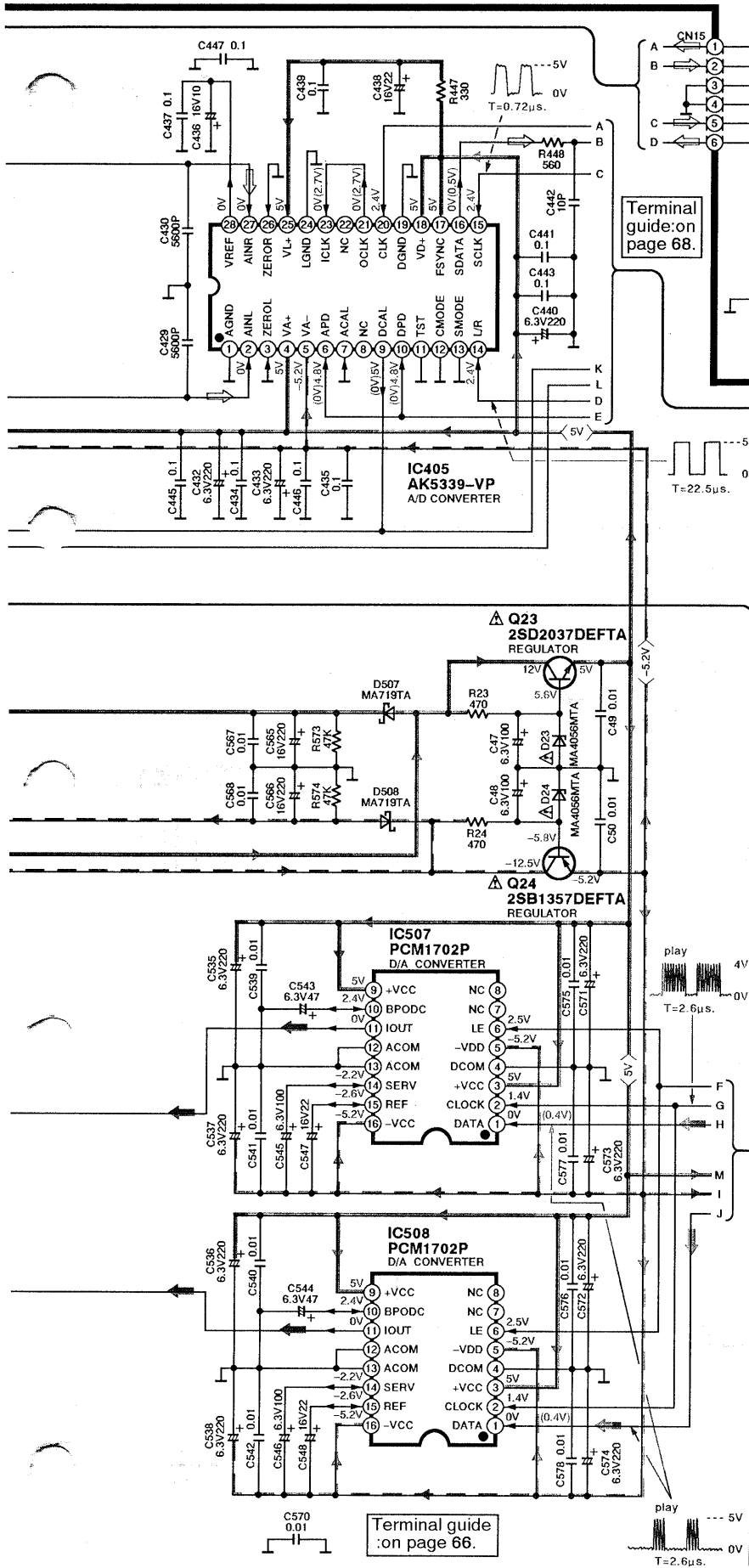






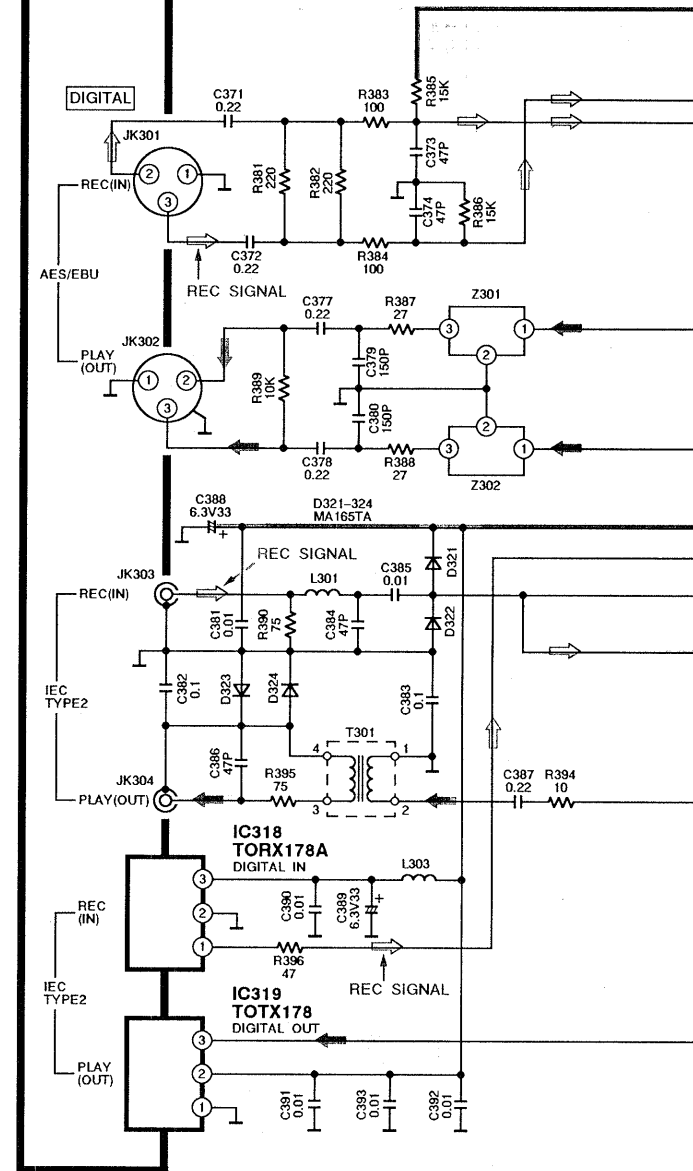




**G** MAIN CIRCUIT (P.C.Board: on pages 52,53)**H** REC LEVEL VR CIRCUIT (P.C.Board: on page 55)

To **A** SERVO CIRCUIT (CN10) on page 30.

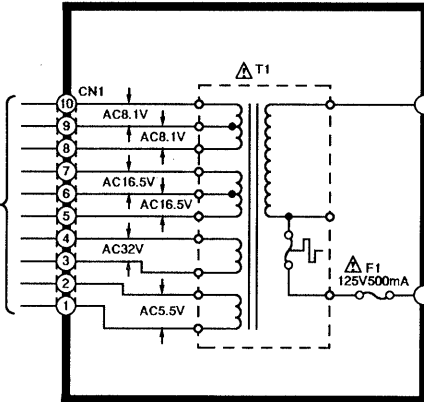
To **B** OPERATION CIRCUIT (CN8) on page 42.





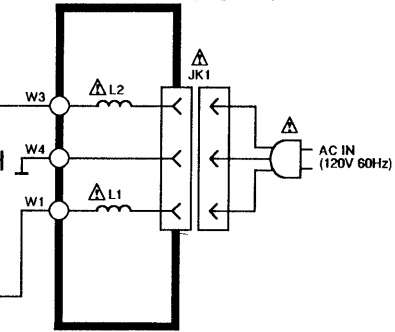
# I POWER TRANSFORMER CIRCUIT

(P.C.Board: on page 56)



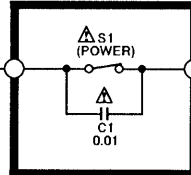
# K AC IN CIRCUIT

(P.C.Board: on page 56)



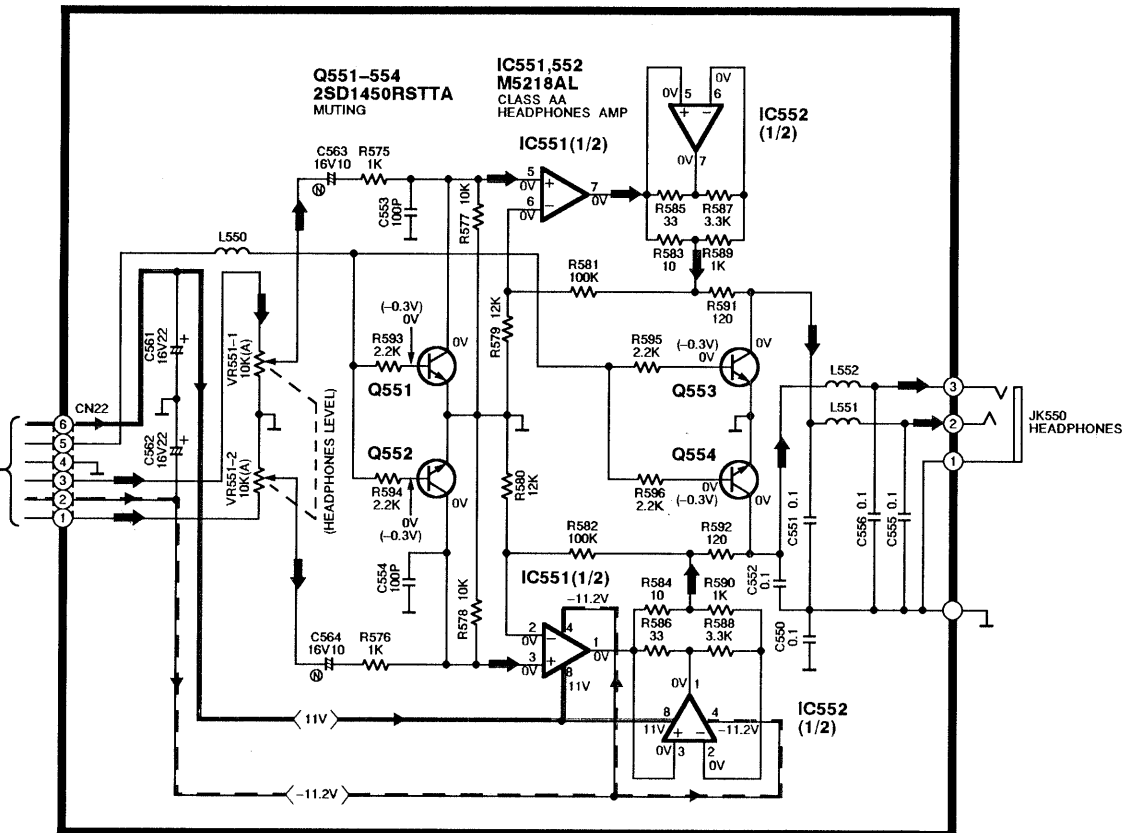
# J POWER SWITCH CIRCUIT

(P.C.Board: on page 56)

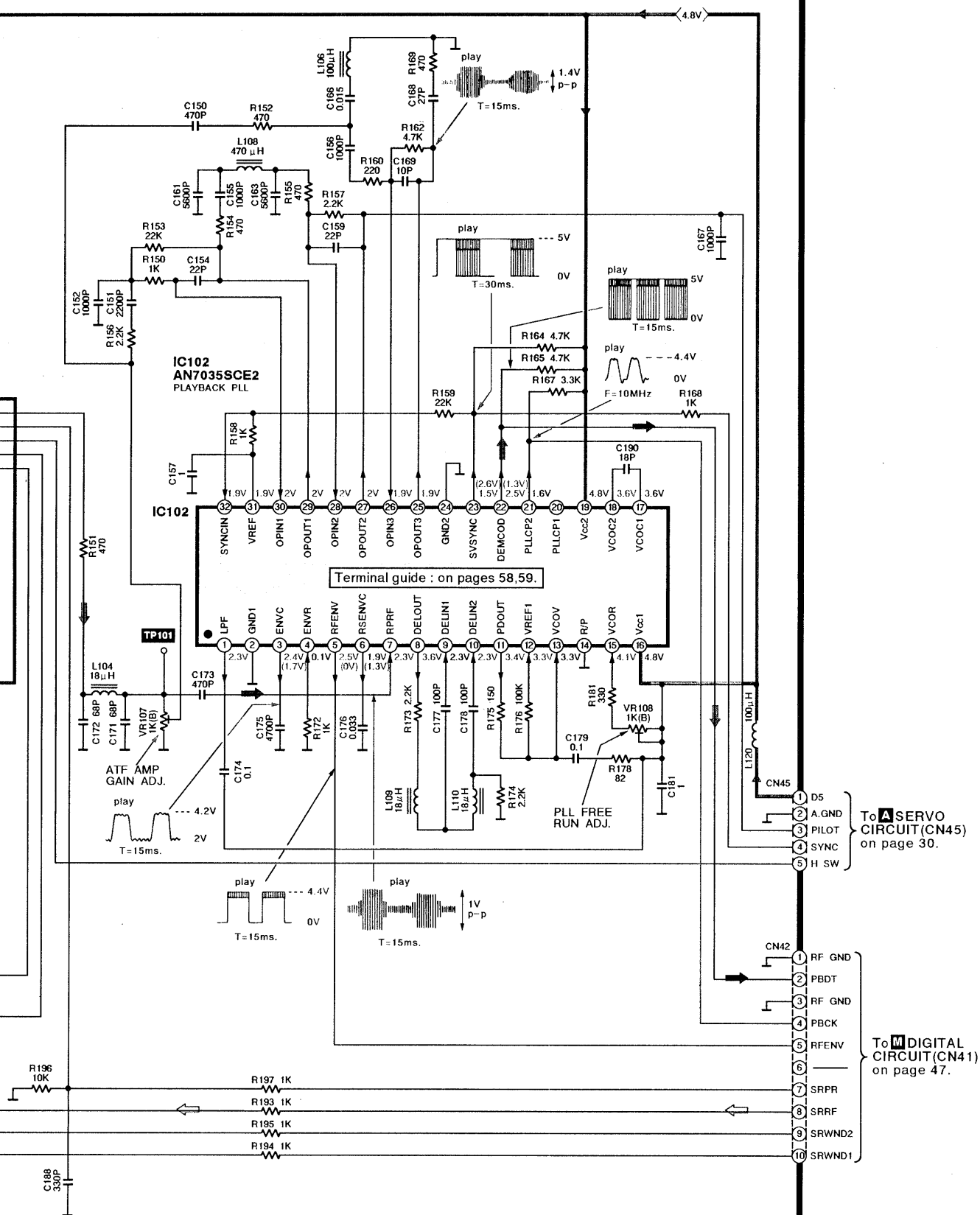


# L HEADPHONES JACK CIRCUIT

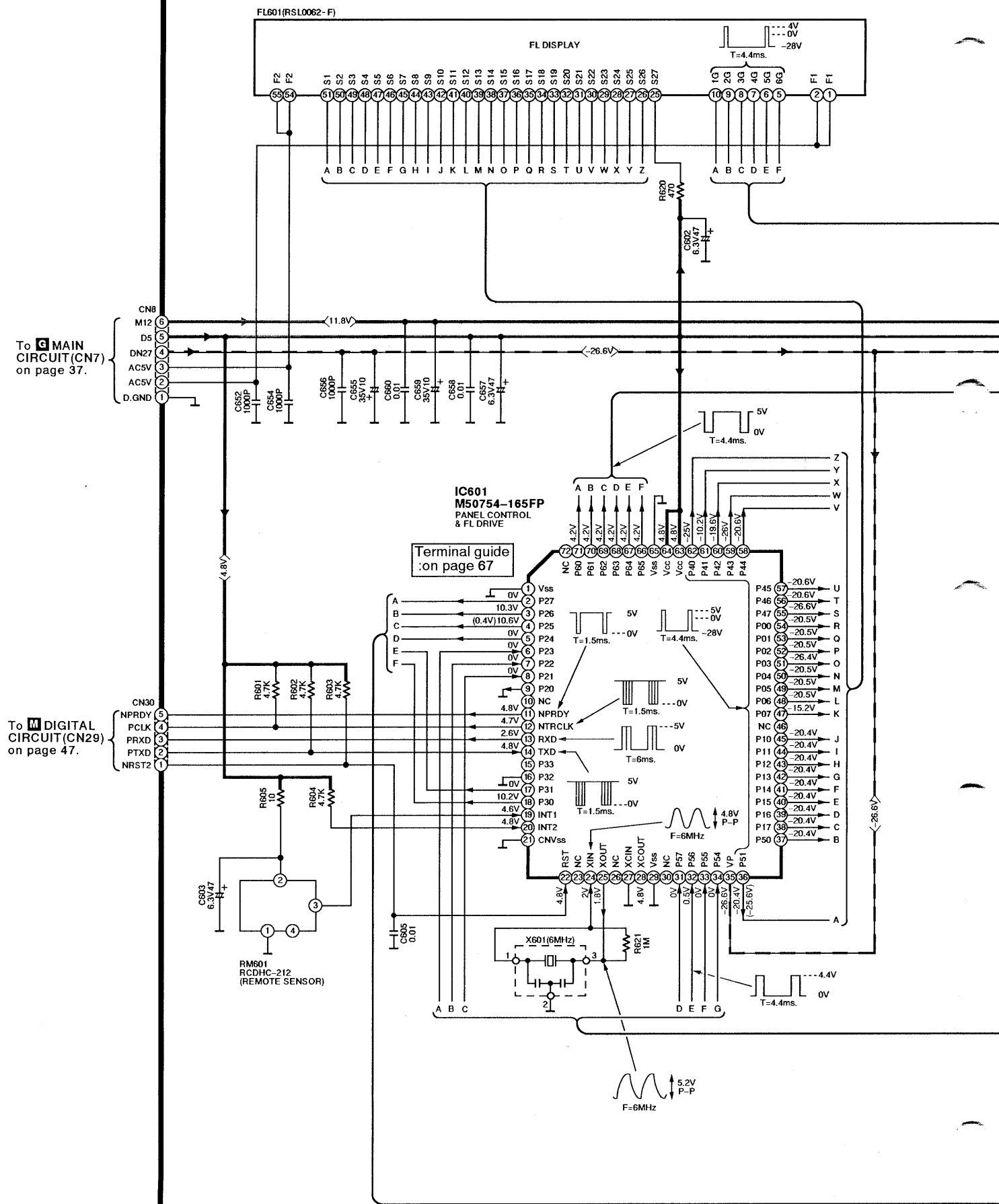
(P.C.Board: on page 52)

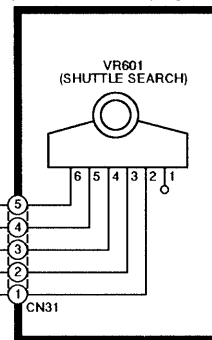


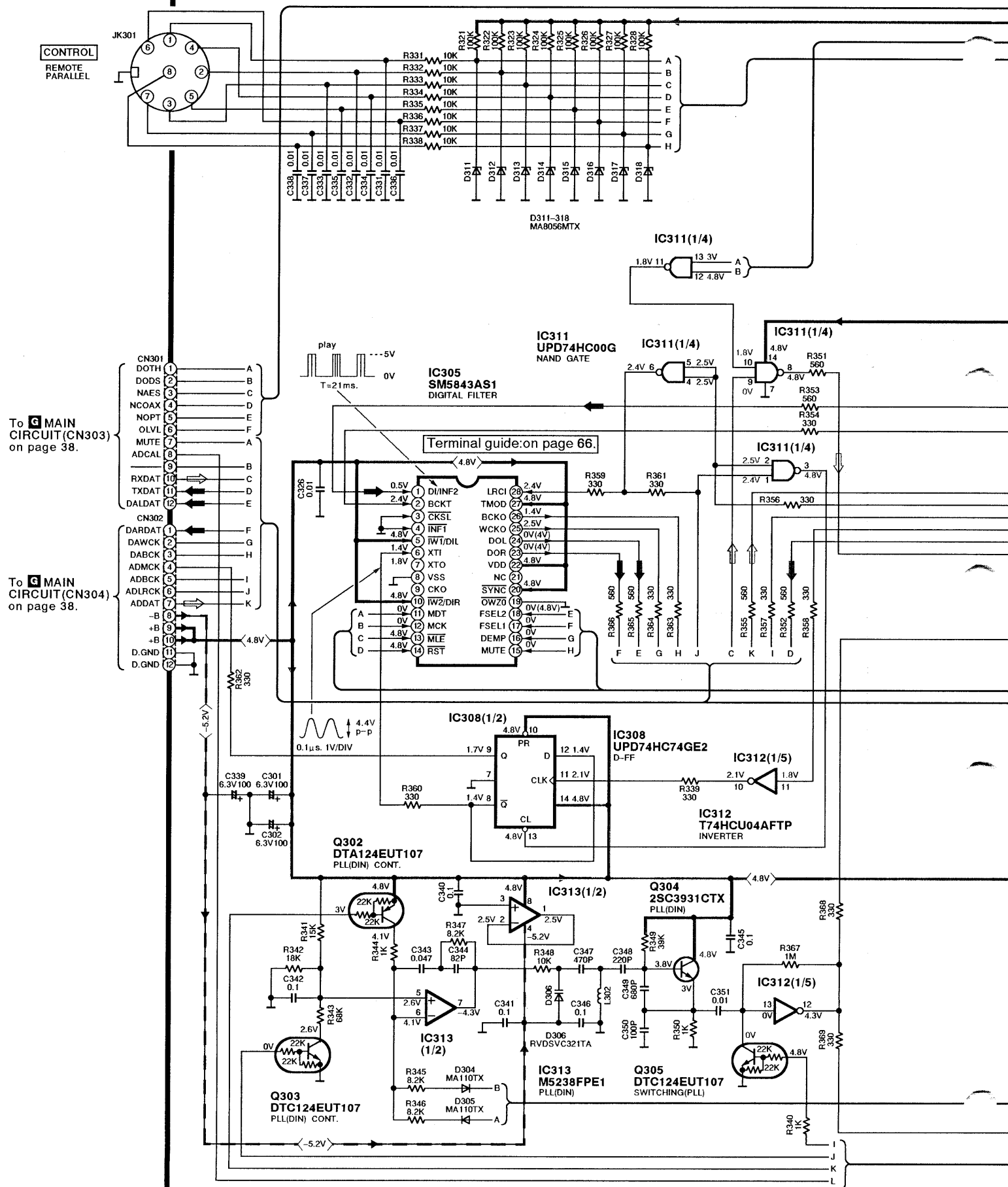




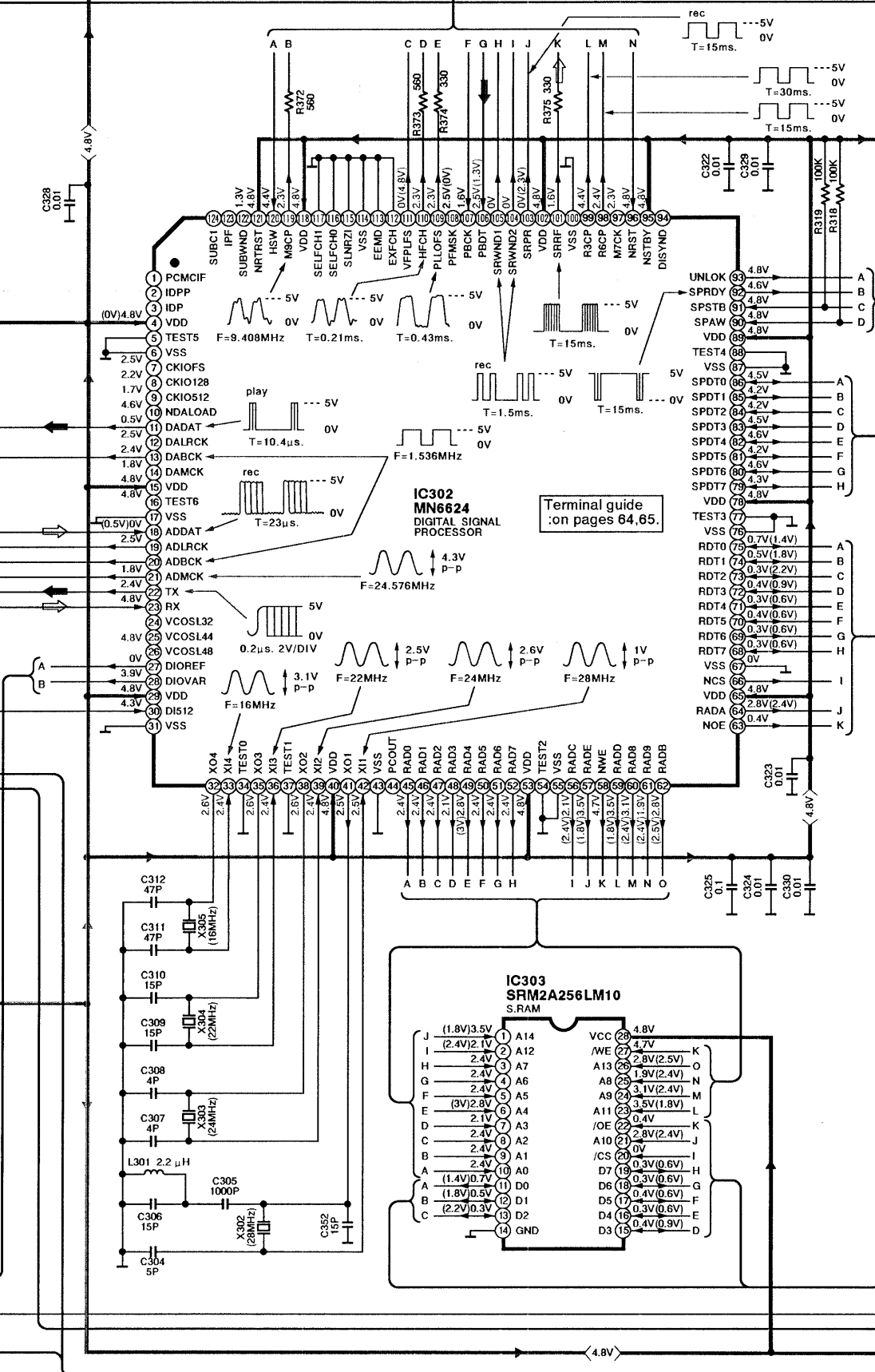
# **E** OPERATION CIRCUIT (P.C.Board: on pages 54,55)

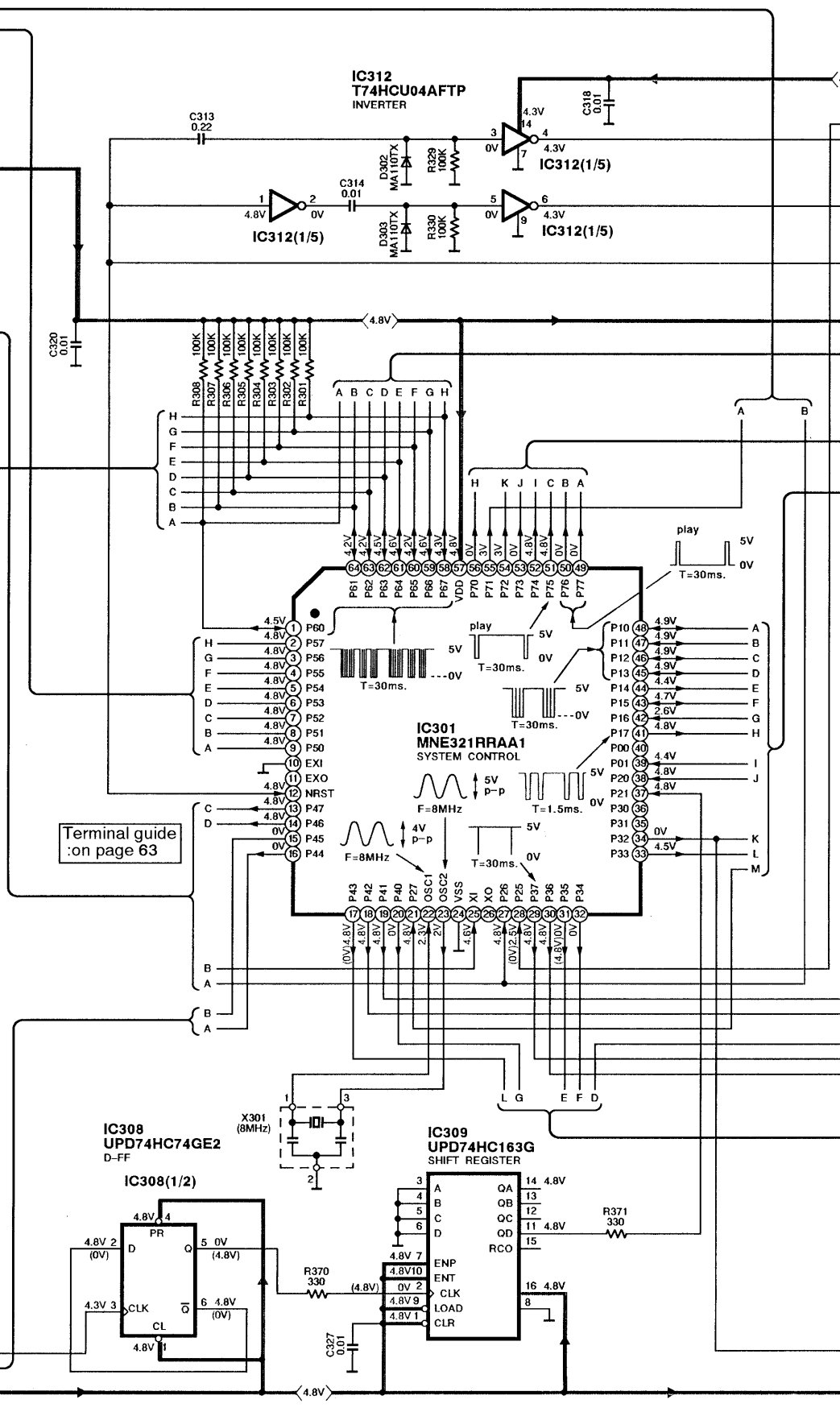


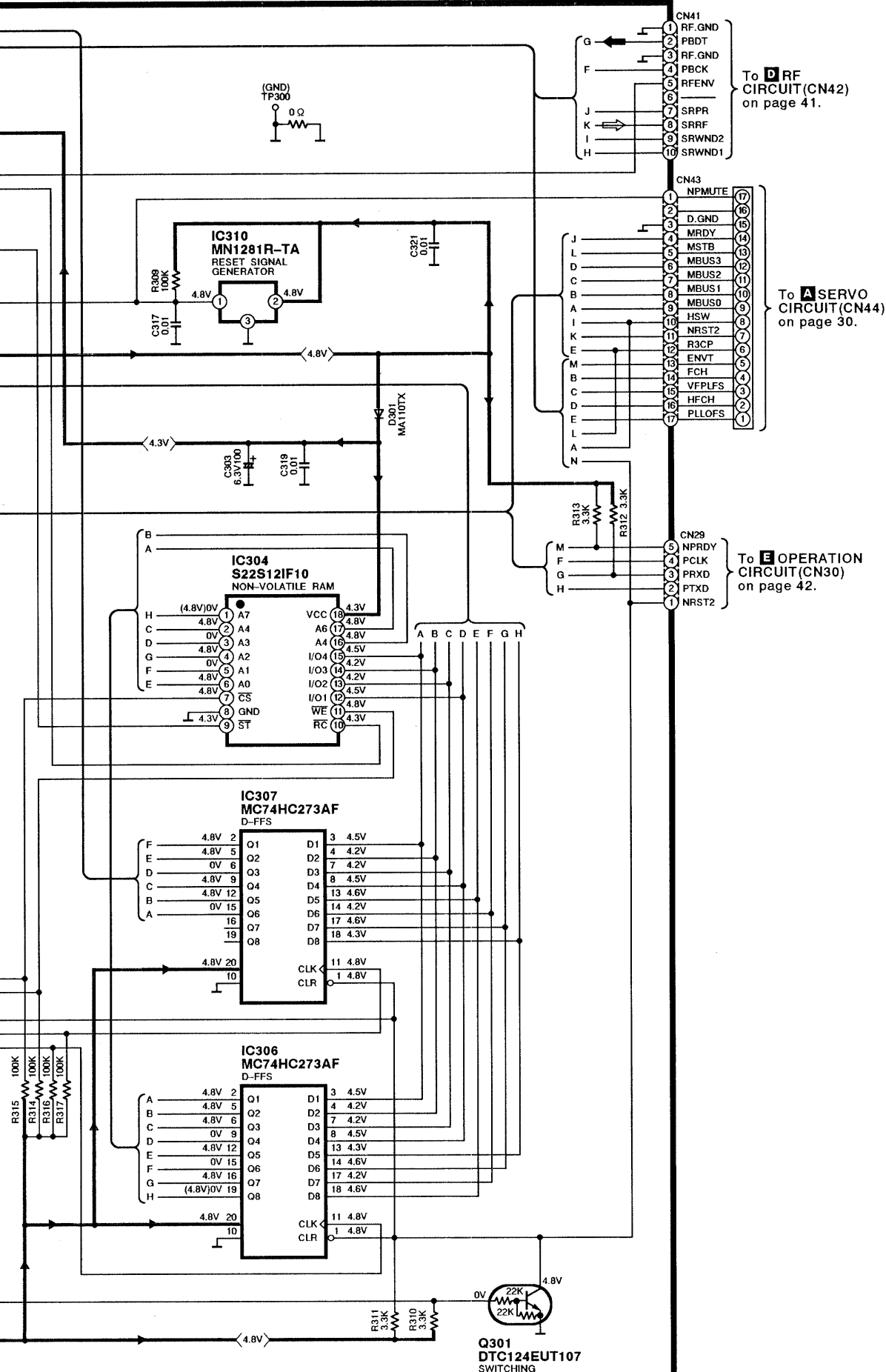


**M** DIGITAL CIRCUIT (P.C.Board:on page 52)



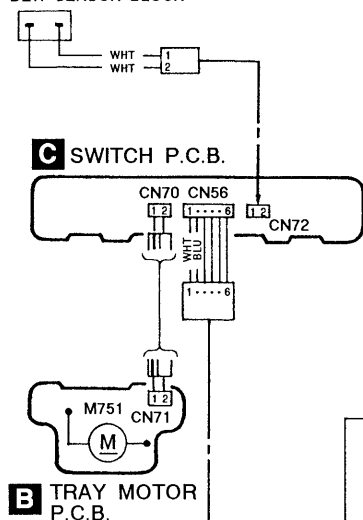
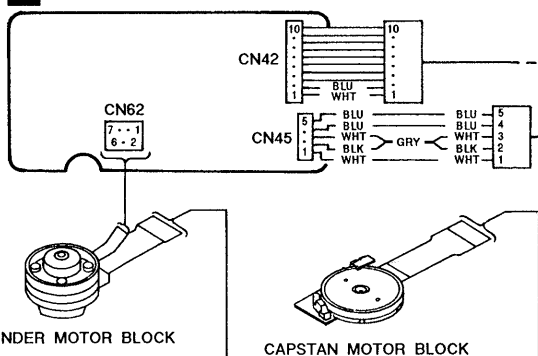




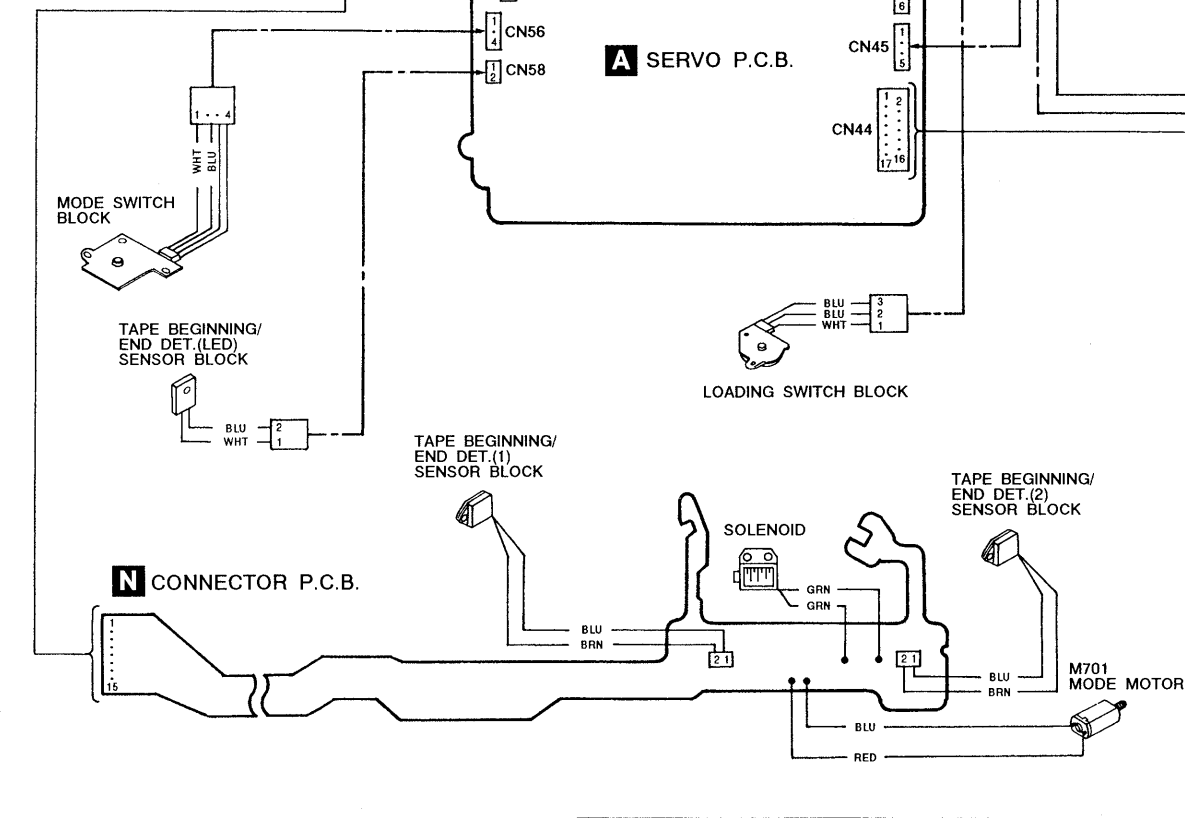


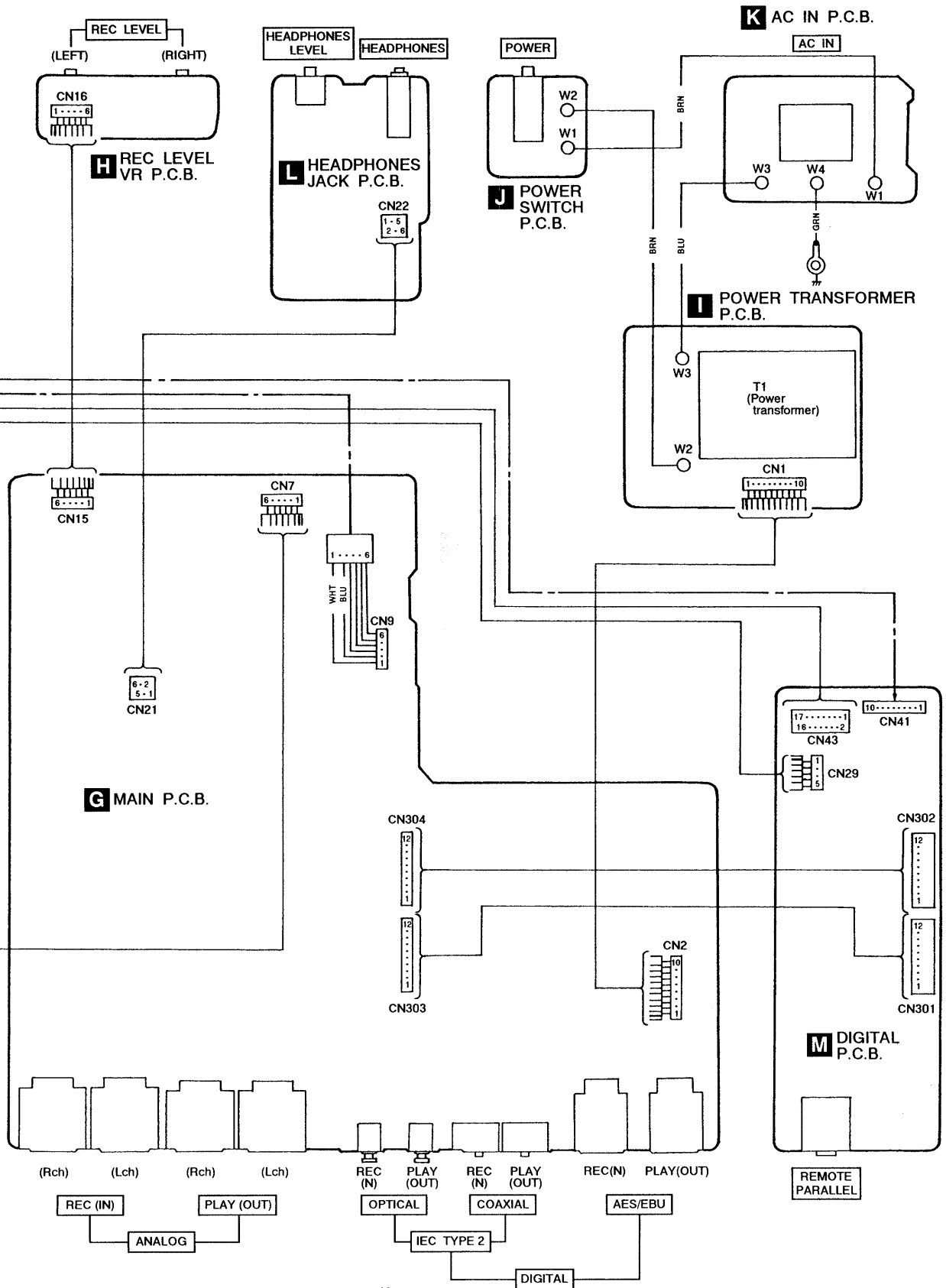
# WIRING CONNECTION DIAGRAM

DEW SENSOR BLOCK

**D** RF P.C.B.

**NOTES:**  
 BLK..... Black  
 BLU..... Blue  
 BRN..... Brown  
 GRN..... Gray  
 GRN..... Green  
 RED..... Red  
 WHT..... White





1

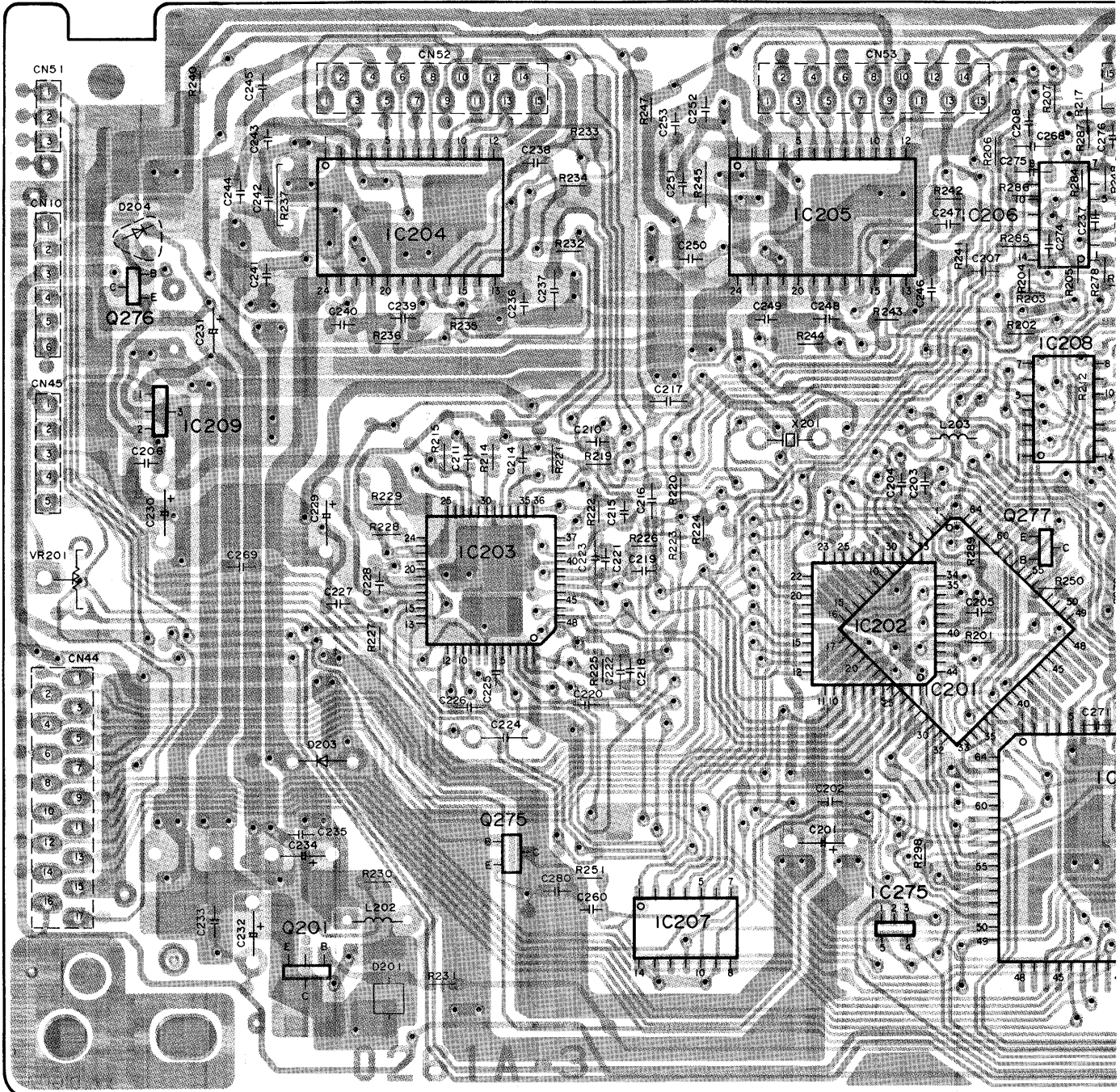
2

3

4

## PRINTED CIRCUIT BOARDS

## A SERVO P.C.B.



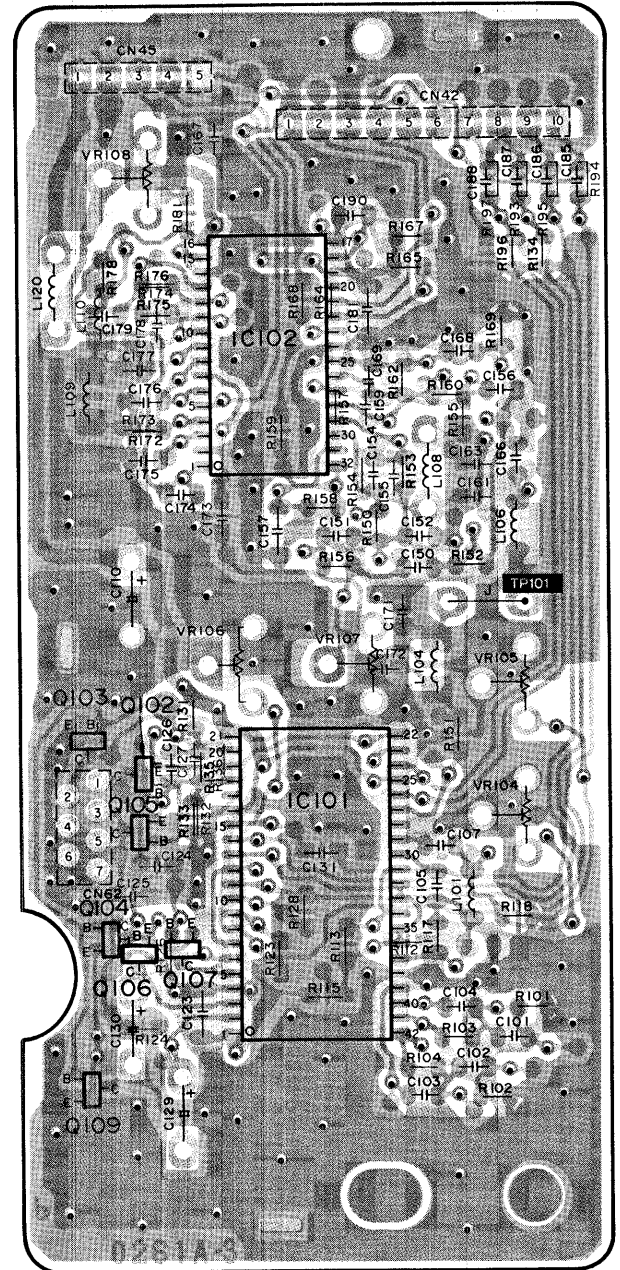
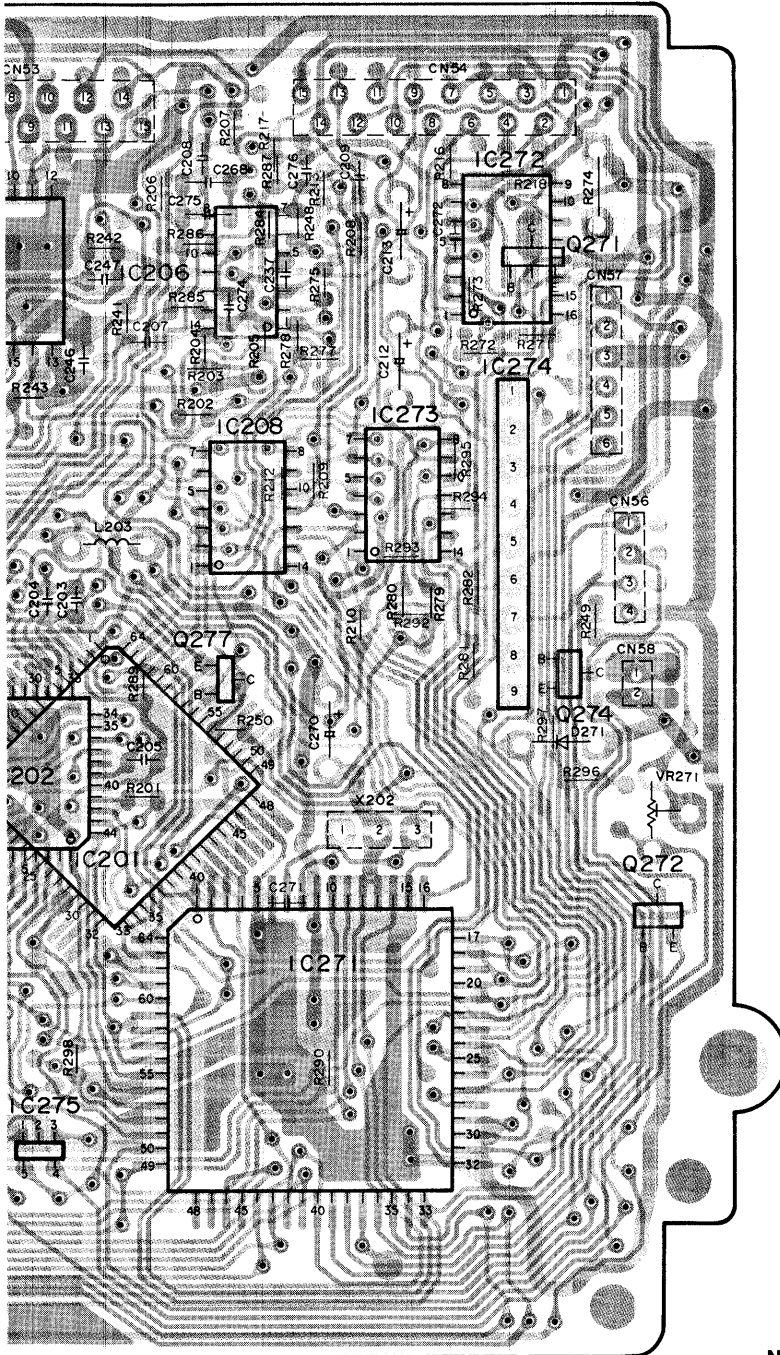


5

6

7

8

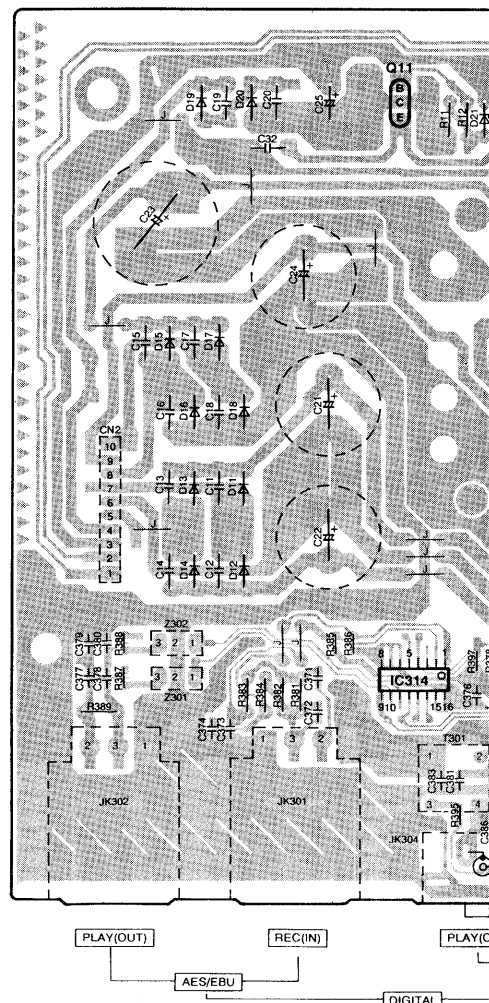
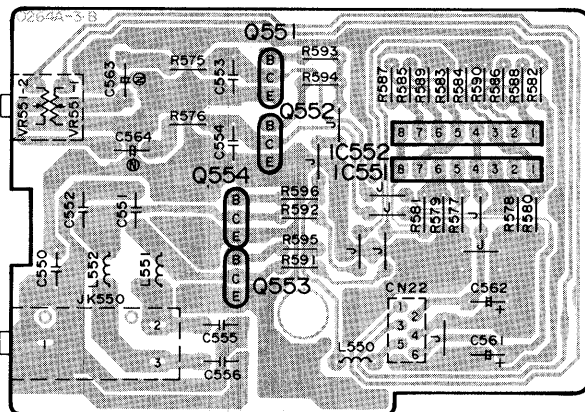
**D** RF P.C.B.**Notes:**

- In this printed circuit board diagram, the parts and foil patterns on the board facing toward you are printed in black.  
The opposite side is printed in blue.
- The “•” mark denotes the connection points of double-faced foil patterns (through holes) on both sides of the printed circuit board.
- This printed circuit board diagram may be modified at any time with the development of new technology.

## F



HEADPHONES

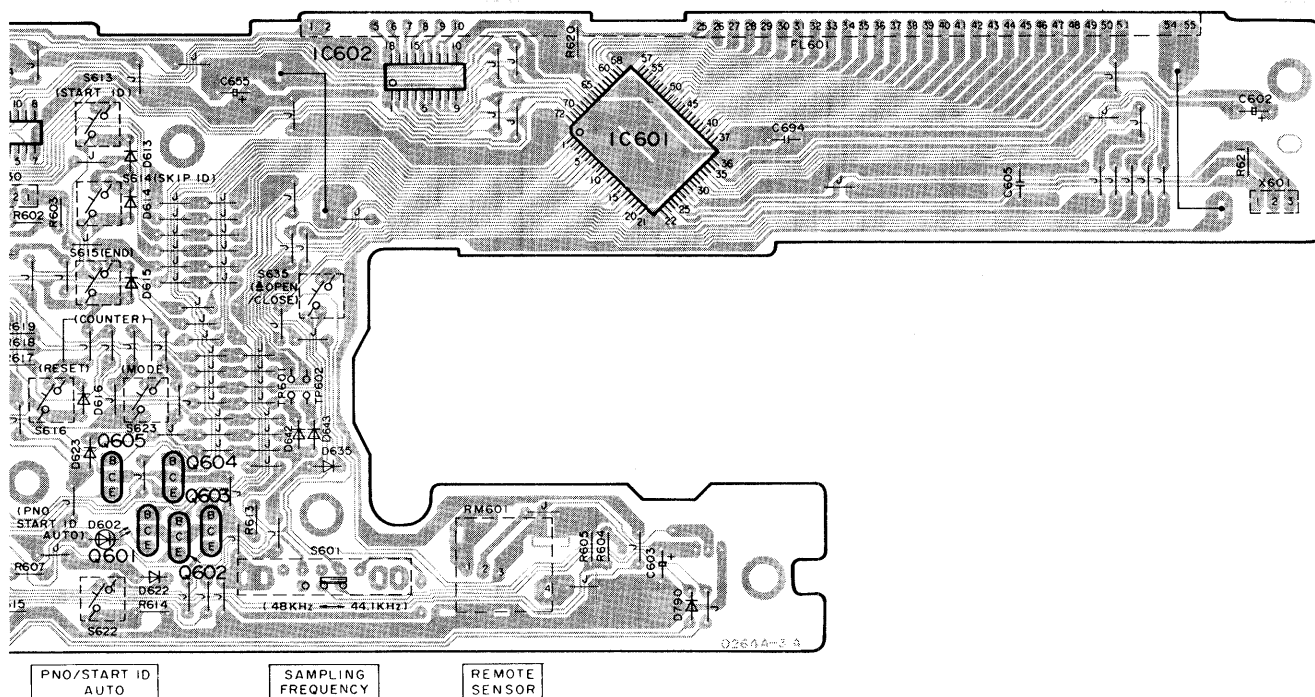


— 52 —

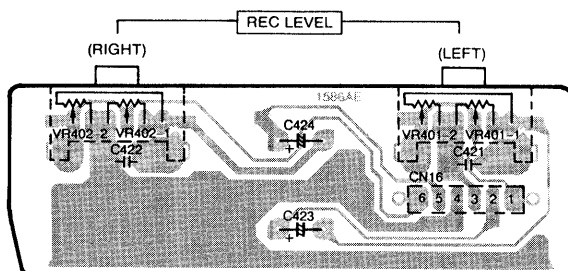
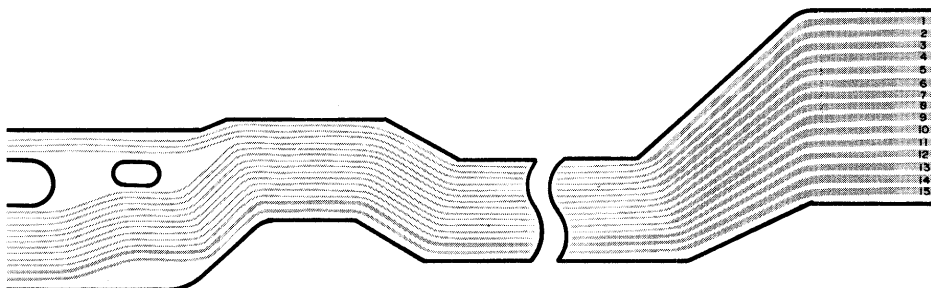
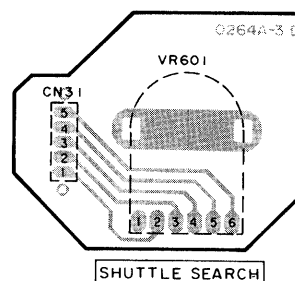








**H REC LEVEL VR P.C.B.**

**F** SEARCH P.C.B.

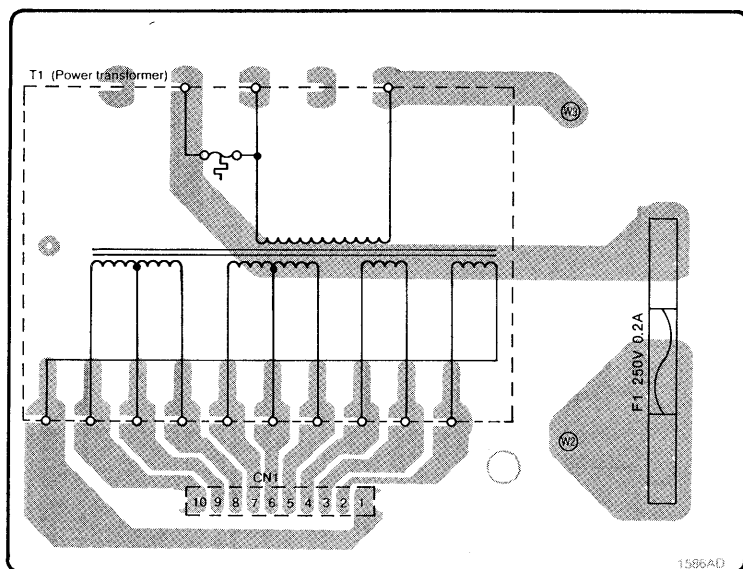
1

2

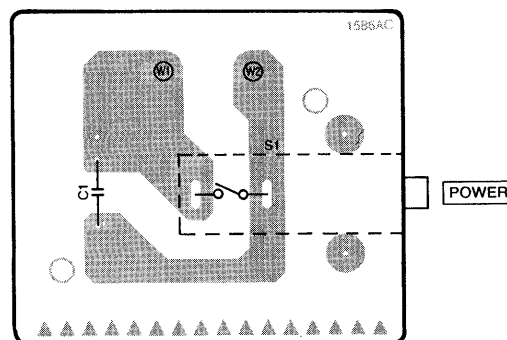
3

4

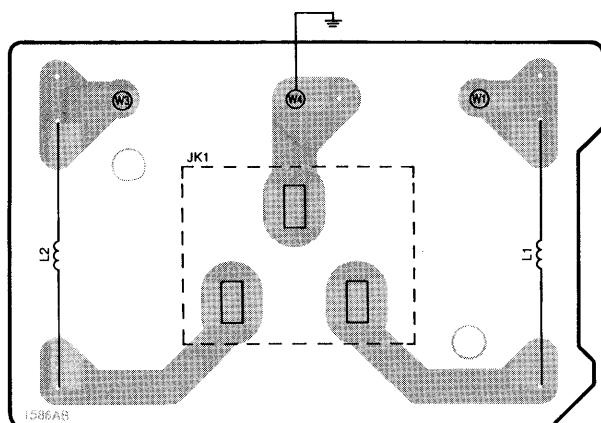
A

**I** POWER TRANSFORMER P.C.B.

B

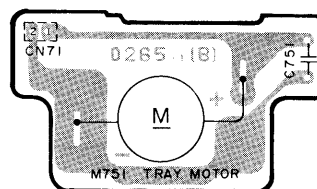
**J** POWER SWITCH P.C.B.

C

**K** AC IN P.C.B.

AC IN  
(120V 60Hz)

D

**B** TRAY MOTOR P.C.B.

E

**C** SWITCH P.C.B.

F

# ■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

	M5238FPE1	8PIN	MC74HC126AFR	14PIN	M5M34050FTP2	16PIN	MC74HC273AF	20PIN
	NJM4580EDTE1	8PIN	MN4066BS-T2	14PIN	UPD74HC163G	16PIN	AN7035SCE2	32PIN
	AN1339SE2	14PIN	UPD74HC00G	14PIN	AN6607NSE2	16PIN	AN7030SE2	42PIN
	M5228FPE2	14PIN	UPD74HC04G	14PIN	AN6873S	18PIN		
	MC74HC125AF	14PIN	UPD74HC04GE2	14PIN	S22S12IF10	18PIN		

	MN53020SDQ	44PIN	M50754-165FP	72PIN
	AN8320NFA	48PIN	MN6624	124PIN
	MNE321RRAA1	64PIN		
	MN17541SDN2	64PIN		
	MN6742SDR	64PIN		

	T74HCU04AFTP	14PIN
	UPD74HC74GE2	14PIN
	SM5843AS1	28PIN

AN78L05ME2	TC4S81FTX	NJM5532DD	<table><tr><td>PCM1702P</td><td>16PIN</td></tr><tr><td>AK5339-VP</td><td>28PIN</td></tr></table>		PCM1702P	16PIN	AK5339-VP	28PIN
PCM1702P	16PIN							
AK5339-VP	28PIN							

TA7291S	M5218AL	SRM2A256LM10	AN3841SR	AN7805F AN7812F	M5F78M12L

M5F79M12L	MN1281R-TA	TORX178A TOTX178	2SB1357DEFTA 2SD2037DEFTA	2SB1238QSTV6	2SB956RTW 2SD1280STW

	2SA1309QRSTA 2SC3311QRSTA 2SD1450RSTTA UN4111TA UN4112TA UN4212TA		2SC3931CTX 2SC3937TW 2SB709RTW DTA114EKTW DTA123JKTW DTA124EUT107 DTB113ZKTW	DTC124EKTW DTC124EUT107 UN5216TW	MA4056MTA 
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MTZJ27DTA MTZJ3R9ATA	1S2473TR 1SR35200TB MA165TA	RVDSVC321TA	MA110TX	MA701TW

LN29RPH-JF1 LN31GPH-JF2 LN49YPH-JF1	MA151ATW	LN28RCPP-JF	MA8056MTX	MA719TA	1N4606TR

## ■ TERMINAL GUIDE

### ● IC101 (AN7030SE2): RF AMP.

Pin No.	Mark	I/O Division	Function
1	V <sub>CC</sub> 1	I	Power supply terminal
2	ACH FB	O	Playback feed back signal (A ch)
3	ACH IN	I	Playback amp. signal (A ch)
4	GND 1	—	GND terminal
5	BCH IN	I	Playback amp. signal (B ch)
6	BCH FB	O	Playback feed back signal (B ch)
7	AREC PCM	I	RF recording level adj. terminal
8	AREC PLT		
9	AREC ATF		
10	BREC ATF		
11	BREC PLT		
12	BREC PCM		
13	REC CNT 1	I	Track pitch signal
14	REC CNT 2	I	ATF area det. signal
15	SRRF IN	I	Recording signal
16	GND 2	—	GND terminal
17	VREF	O	Reference voltage terminal (Not used, open)
18	AREC OUT	O	Recording signal (A ch)
19	BREC OUT	O	Recording signal (B ch)
20	BTL REC	O	Recording control signal
21	V <sub>CC</sub> 2	I	Power supply terminal
22	REC ON	O	Recording drive terminal (REC: "H")

Pin No.	Mark	I/O Division	Function
23	PLAY ON	O	Playback drive terminal (PLAY: "H")
24	HSW	I	Head switching signal
25	AR/RSEL	I	Not used, connected to power supply
26	R/PSEL	I	Recording/playback select signal (REC: "H", PLAY: "L")
27	EQ OUT	O	Equalization signal
28	EQ IN 3	I	Equalization amp. signal
29	EQ IN 2		
30	EQ IN 1		
31	BF REQ	I	Equalization amplitude drive terminal (B ch)
32	B PHASE	I	Equalization phase drive terminal (B ch)
33	B GAIN	I	Equalization gain drive terminal (B ch)
34	AF REQ	I	Equalization amplitude drive terminal (A ch)
35	A PHASE	I	Equalization phase drive terminal (A ch)
36	A GAIN	I	Equalization gain drive terminal (A ch)
37	SV RF	O	Playback signal
38	GND 3	—	GND terminal
39	A INT	I	Playback amp. signal (A ch)
40	B INT	I	Playback amp. signal (B ch)
41	B INT IN	O	Playback amp. signal (B ch)
42	A INT IN	O	Playback amp. signal (A ch)

### ● IC102 (AN7035SCE2): Playback PLL

Pin No.	Mark	I/O Division	Function
1	LPF	O	Buffer amp. 1 reference terminal
2	GND 1	—	GND terminal
3	ENVC	O	ENV time constant setting terminal
4	ENVR	I	ENV threshold voltage adj. terminal
5	RSENV	O	RF envelope signal
6	RSENV C	O	RSENV time constant setting terminal
7	RSRF	I	RF signal

Pin No.	Mark	I/O Division	Function
8	DELOUT	O	RF signal
9	DELIN 1	I	Delay (45°) signal
10	DELIN 2	I	Delay (90°) signal
11	PDOUT	O	Phase comparator signal
12	VREF 1	I	V/I converter reference voltage terminal
13	VCOV	I	OSC frequency control terminal
14	R/P	I	Recording/playback select terminal (Not used, connected to GND)

Pin No.	Mark	I/O Division	Function
15	VCOR	I	OSC frequency adj. terminal
16	V <sub>CC</sub> 1	I	Power supply terminal
17	VCOC 1	O	VCO terminal
18	VCOC 2	O	VCO terminal
19	V <sub>CC</sub> 2	I	Power supply terminal
20	PLL CP 1	O	Clock (2 CK) signal (Not used, open)
21	PLL CP 2	O	Clock (CK) signal
22	DEMCOD	O	NRZI demodulated signal for playback signal with PLL
23	SVSYNC	O	ATF sync. signal

Pin No.	Mark	I/O Division	Function
24	GND 2	—	GND terminal
25	OP OUT 3	O	ATF 3 signal
26	OP IN 3	I	ATF 3 signal
27	OP OUT 2	O	ATF 2 signal
28	OP IN 2	I	ATF 2 signal
29	OP OUT 1	O	ATF 1 signal
30	OP IN 1	I	ATF 1 signal
31	VREF	I	Reference voltage terminal
32	SYNC IN	I	ATF sync. det. terminal

• IC201 (MN6742SDR): Servo processor

Pin No.	Mark	I/O Division	Function
1	OP10A	O	Cylinder rotative stop signal
2	SCK	I	Serial clock signal
3	SDA	I/O	Serial data signal
4	OSC 1	I	System clock (8 MHz) signal
5	OSC 2	O	
6	NRST	I	Reset signal
7	NC	—	Not connection
8	OP20A	O	SSP ready signal
9	NC	—	Not connection
10	V <sub>SS</sub>	—	GND terminal
11	VHS	—	Not used, open
12	OP 101	O	CAPFG/RLFGT select signal
13	TP 2	O	R3CP/RLFGT select signal
14	TP 3	I	PLL off-set/parallel data signal
15	TP 4		
16	TP 5		
17	TP 6		
18	TP 7	I	PLL off-set/data effective flag terminal
19	TP 8	I	Not used, connected to power supply
20	MOS	I	Serial port/strobe signal
21	TST	—	Test mode terminal (Normal, connected to GND)
22	ENC	—	Connected to GND terminal

Pin No.	Mark	I/O Division	Function
23	NC	—	Not connection
24	NC		
25	V <sub>DD</sub>	I	Power supply terminal
26	NC	—	Not connection
27	RSW	—	Not used, open
28	HAS	O	A/D input select signal (Not used, open)
29	AVM	—	Not used, connected to GND
30	VLP	—	Not used, open
31	STM	I	R3TU or RLFGT (64 P/R) signal
32	STR	I	Comparator reference signal of STM input
33	CAE	O	Capstan velocity control signal
34	CYE	O	Cylinder velocity control signal
35	END	I	VREF or ATFTER voltage signal
36	VSF	I	CYLPG signal
37	ASH 1	I	Capstan FG or RLFGT signal after EXOR
38	NC	—	Not connection
39	AFB 1	O	Inverter amp. signal of ATFTER input (Not used, open)
40	NC	—	Not connection
41	AFG 1	I	ATF tracking error voltage terminal
42	ASH 2	O	Not used, connected to GND
43	AFB 2	—	Not used, open
44	NC	—	Not connection



Pin No.	Mark	I/O Division	Function
45	AFG 2	I	Reference voltage terminal
46	VDA	I	Power supply terminal
47	VSA	—	GND terminal
48	ORE	O	Reference voltage terminal
49	IRE	I	
50	GND	—	GND terminal
51	IPL	O	Not used, open
52	NC	—	Not connection
53	CLP	I	Not used, connected to GND
54	CP 1	O	Not used, open

Pin No.	Mark	I/O Division	Function
55	CP 2	I	Supply reel FG signal
56	NC	—	Not connection
57	NC		
58	CN 1	O	Not used, open
59	CN 2	I	Not used, connected to GND
60	CTL	O	Not used, open
61	PFG	I	Cylinder FG signal
62	PGM	I	Not used, connected to GND
63	CUL	O	Capstan rotative direction signal
64	NC	—	Not connection

• IC202 (MN53020SDQ): ATF

Pin No.	Mark	I/O Division	Function
1	NSNC	O	SYNC det. monitor terminal
2	SVAL	I	ATF select terminal
3	PCMOK	I	PCM playback monitor terminal
4	SPE	O	Starting pulse of counter track lock
5	SP 2	O	Sampling pulse signal for pilot signal of adjacent track
6	SP 1		
7	DCYLPG	I	Cylinder PG signal
8	DCAPFG 1	I	Capstan FG signal
9	DCAPFG 2		
10	DRLFGT	I	Take-up reel FG signal
11	DCYLFG	I	Cylinder FG signal
12	SYNC	I	ATF sync. det. terminal
13	NRST	I	Reset signal
14	R3CP	I	Timing signal for RF envelope signal control
15	ENV T		
16	FCH	I	System clock signal (9.408 MHz)
17	V <sub>DD</sub>	I	Power supply terminal
18	V <sub>SS</sub>	—	GND terminal
19	MODE 1	I	SYNC det. select terminal (Not used, connected to GND)
20	HFCH	I	Clock signal for PLL off-set data
21	PLLOFS	I	PLL off-set data signal

Pin No.	Mark	I/O Division	Function
22	TEST 6	—	Not used, connected to GND
23	P MODE	I	Pulse width select terminal (Not used, open)
24 28	TEST 1 TEST 5	I	Test terminal (Not used, connected to GND)
29	SPHT	—	Not used, open
30	HSWS	O	Head switching signal (33.33 Hz)
31	HSWR		
32	SEL A	I	CAPFGTU signal select terminal
33	SEL B	I	R3TU signal select terminal
34	PLL 0	O	Output signal after decoded 4 bit parallel data of PLLOFS
35	PLL 1		
36	PLL 2		
37	PLL 3		
38	MODE 2	—	Not used, open
39	V <sub>SS</sub> 2	—	GND terminal
40	V <sub>DD</sub> 2	I	Power supply terminal
41	R3TU	O	Building-up edge signal of R3CP/DRLFGT
42	CAPFGTU	O	Capstan FG signal/Take-up reel FG signal
43	CAPER	O	Capstan rotative direction control signal
44	NLNR	O	Track linearity monitor terminal



**• IC203 (AN8320NFA): Linear servo**

Pin No.	Mark	I/O Division	Function
1	FG1 AO	O	Capstan FG signal
2	FG1 AI	I	Capstan FG (—) signal
3	FG1 FI	I	Frequency characteristic setting terminal
4	CYL PG	O	Cylinder PG signal
5	PGVR	I	PG delay time adj. terminal
6	CYPGI	I	PG schmidt comparator terminal
7	GND	—	GND terminal
8	SVRF	I	ATF terminal
9	CPD	I	Det. capacity connection terminal
10	CCI	O	Full-wave rectification buffer terminal
11	CCO	I	Clamp circuit terminal
12	SP 1	I	SP 1 terminal
13	SP 2	I	SP 2 terminal
14	VSPE	I	SPE setting terminal
15	SPE	I	SPE terminal
16	CSH	I	Hold capacity connection terminal
17	ATFTER	O	ATF control command signal
18	CFB	—	Phase compensation terminal
19	V <sub>CC</sub>	I	Power supply terminal
20	ATFON	I	ATF ON terminal (Not used, connected to power supply)
21	PTBIA	—	Photo-transistor bias terminal (Not used, open)
22	VREF	O	Reference voltage terminal
23	LEDR 1	I	Bias voltage terminal
24	LEDH 1	—	Constant current terminal (Not used, open)
25	LEDR 2	I	Bias voltage terminal

Pin No.	Mark	I/O Division	Function
26	LEDH 2	—	Constant current terminal (Not used, open)
27	CYL FG	O	Cylinder FG signal
28	CYF GSI	I	Cylinder schmidt comparator terminal
29	CYF GAO	O	Cylinder op. amp. terminal
30	CYF GAI	I	Cylinder op. amp. (—) terminal
31	NST BY	I	STAND BY signal (Not used, connected to power supply)
32	TF GAI	I	Take-up reel op. amp. (—) terminal
33	TF GAO	I	Take-up reel op. amp. terminal
34	TF GSI	I	Take-up reel schmidt comparator terminal
35	RLFGT	O	Take-up reel FG signal
36	RLFGS	O	Supply reel FG signal
37	SF GSI	I	Supply reel schmidt comparator terminal
38	SF GAO	O	Supply reel op. amp. terminal
39	SF GAI	I	Supply reel op. amp. terminal
40	V <sub>CC</sub>	I	Power supply terminal
41	FG 2FI	—	Frequency characteristic setting terminal
42	FG 2AI	I	Capstan FG (—) signal
43	FG 2AO	O	Capstan FG signal
44	FG 2SI	I	Capstan FG schmidt comparator terminal
45	CPFG 2	O	Capstan FG signal
46	FILSLD	I	Frequency characteristic DOWN terminal
47	CPFG 1	O	Capstan FG signal
48	FG 1SI	I	Capstan FG schmidt comparator terminal

**• IC271 (MN17541SDN2): Mechanism control**

Pin No.	Mark	I/O Division	Function
1	NSBOA	O	Serial data signal
2	NRST	I	Reset signal
3	NSYNC	—	Not used, open
4	X 2		
5	X 1		

Pin No.	Mark	I/O Division	Function
6	V <sub>SS</sub>	—	GND terminal
7	OSC 2	O	Clock signal (8MHz)
8	OSC 1	I	
9	V <sub>DD</sub>	I	Power supply terminal
10	NTC1B	I	Supply reel FG signal

Pin No.	Mark	I/O Division	Function
11	NIRQ 0	I	Take-up reel FG signal
12	NIRQ 1	I	Transfer strobe signal of system control
13	P 00 (MSTB)		
14	P 01 (MRDY)	O	Transfer ready signal of system control
15	P 02 (NSSTB)	O	Transfer strobe signal
16	P 03 (NSRDY)	I	Transfer ready signal
17	P 10 (ATFGT)	O	ATF gain ( $\times 1/2$ ) select terminal
18	P 11 (REWGT)	O	REW FG · PG gain select terminal
19	P 12 (LPMOD)	—	Not used, open
20	P 13 (MODMT0)	O	Mode motor control signal
21	P 20 (MODMT1)		
22	P 21 (MODMT2)		
23	P 22	—	Not used, open
24	P 23 (PLG)	O	Plunger control signal
25	P 30	—	Not used, open
26	P 31		
27	P 32 (LOAD 1)	O	Tray motor control (+) terminal
28	P 33 (LOAD 2)	O	Tray motor control (—) terminal
29	P 40	—	Not used, open
30	P 41 (DEW)	I	Dew sensor det. signal
31	P 42 (EOT)	I	Tape end det. signal
32	P 43 (BOT)	I	Tape begin det. signal
33	P 50 (OPEN)	I	Cassette open det. signal
34	P 51 (CLOSE)	I	Cassette close det. signal
35	P 52 (LOAD S)	I	Loading start det. signal
36	P 53 (LOAD E)	I	Loading stop det. signal

Pin No.	Mark	I/O Division	Function
37	P 60 (SW 2)	O	Test terminal
38 39 40	P 61 (MMOD 0) P 63 (MMOD 2)	I	Tape mode det. signal
41 42 43 44	P 70 (MBUS 0) P 73 (MBUS 3)	I/O	Transfer bus terminal of system control
45	P 80 (RCC)	—	Not used, open
46	P 81 (FIL)	O	FILTER select signal
47	P 82 (ATFON)	—	Not used, open
48	P 83 (NSTBY)	—	Not used, open
49	P 90 (NSRST)	O	Reset signal
50	P 91 (LEDDRV)	O	Tape begin/end LED control signal
51	P 92 (PCMOK)	I	PCM playback det. signal
52	P 93 (SVAL 0)	I	ATF effective position setting terminal
53	NEXPS	I	Not used, connected to power supply
54	PA 0 (NSNCOK)	I	ATF sync. det. terminal
55	PA 1 (NLNOK)	I	Track linearity det. terminal
56	PA 2 (CAPER)	I	Capstan rotative direction command signal
57	PA 3	—	Not used, open
58 59	PB 0 (TH 1) PB 1 (TH 2)	I	Tape hall det. signal
60	NSBTB	I	Muting det. signal
61 62	NSBIB NSBOB	I	Test terminal (Not used, open)
63	NSBTA (SCLK)	I	Serial transfer clock signal
64	NSBIA (SDAT)	I/O	Serial transfer data signal

**• IC301 (MNE321RRAA1): System control**

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	P60	I/O	Address and data bus terminal.	34	P32	O	Reset signal of mechanism control.
2 3 9	P57 P50	I	8-pin parallel input terminals of remote control operation.	35	P31	—	Not used, open.
10	EXI	—	Not used, connected to GND.	36	P30		
11	EXO	—	Not used, open.	37	P21	I	PLL control signal.
12	NRST	I	Reset signal input ("L": reset)	38	P20	I	Transfer ready signal of mechanism control.
13	P47	O	Signal processor strobe signal.	39	P01	I	Head switching signal. (33.33Hz)
14	P46	O	Signal processor address setting terminal.	40	P00	—	Not used, open.
15	P45	—	Not used, open.	41	P17	O	Serial data reception signal.
16	P44	O	Muting signal.	42	P16	I	Serial data transmission signal.
17	P43	O	Reset signal.	43	P15	I/O	Serial clock signal.
18	P42	O	Write enable terminal.	44	P14	O	Timing signal for RF envelope signal control.
19	P41	O	Chip select terminal.	45	P13	I/O	Transfer bus terminal for mechanism control
20	P40	O	Digital de-emphasis ON/OFF terminal. ("H": ON)	46	P12		
21	P27	I	Ready signal.	47	P11		
22	OSC 1	I	Crystal OSC terminal. (8MHz)	48	P10		
23	OSC 2	O		49	P77	O	Attenuation command serial data output terminal.
24	Vss	—	GND terminal.	50	P76	O	Attenuation command bit clock output terminal.
25	XI	I	Data transfer command signal.	51	P75	O	Attenuation command latch clock output terminal.
26	XO	—	Not used, open.	52	P74	O	PLL control terminal.
27	P26	I	PLL unlock signal.	53	P73		
28	P25	I	RF envelope signal.	54	P72		
29	P37	O	Clock signal of D-FFS.	55	P71	O	Digital signal.
30	P36	O	Clock signal of D-FFS.	56	P70	O	Muting control terminal ("H": Mute)
31	P35	O	De-emphasis filler select terminal.	57	V <sub>DD</sub>	I	Power supply terminal.
32	P34			58 3 64	P67 P61	I/O	Address and data bus terminal.
33	P33	O	Transfer strobe signal of mechanism control.				

## • IC302 (MN6624): Digital signal processor

Pin No.	Mark	I/O Division	Function
1	PCMCIF	O	Flag counter terminal
2	IDPP		
3	IDP	O	Test terminal
4	V <sub>DD</sub>	I	Power supply terminal
5	TEST5	—	Not used, connected to GND
6	V <sub>SS</sub>	—	GND terminal
7	CKIO FS	—	Not used, open
8	CKIO 128	O	Test terminal (Not used, open)
9	CKIO 512	—	Not used, open
10	NDALOAD	—	Not used, open
11	DADAT	O	DA data signal
12	DALRCK	O	LR discrimination signal (Not used, open)
13	DABCK	O	Serial bit clock signal
14	DAMCK	—	Not used, open
15	V <sub>DD</sub>	I	Power supply terminal
16	TEST 6	—	Not used, open
17	V <sub>SS</sub>	—	GND terminal
18	ADDAT	I	AD data signal
19	ADLRCK	O	LR discrimination signal
20	ADBCK	O	Serial bit clock signal
21	ADMCK	O	External clock signal
22	TX	O	Digital signal
23	RX	I	
24	VCOS L32	—	Not used, open
25	VCOS L44		
26	VCOS L48		
27	DIO REF	O	Digital signal (PLL control)
28	DIO VAR	O	
29	V <sub>DD</sub>	I	Power supply terminal
30	DI 512	I	Digital signal (512 FS)
31	V <sub>SS</sub>	—	GND terminal
32	XO 4	O	Crystal terminal (32 kHz×512)
33	XI 4	I	

Pin No.	Mark	I/O Division	Function
34	TEST 0	—	Not used, connected to GND
35	XO 3	O	Crystal terminal (44.1 kHz×512)
36	XI 3	I	
37	TEST 1	—	Not used, connected to GND
38	XO 2	O	Crystal terminal (48 kHz×512)
39	XI 2	I	
40	V <sub>DD</sub>	I	Power supply terminal
41	XO 1	O	Crystal terminal (28 MHz)
42	XI 1	I	
43	V <sub>SS</sub>	—	GND terminal
44	PC OUT	—	Not used, open
45	RAD 0	O	RAM address bus terminal
46	RAD 1		
47	RAD 2		
48	RAD 3		
49	RAD 4		
50	RAD 5		
51	RAD 6		
52	RAD 7		
53	V <sub>DD</sub>	I	Power supply terminal
54	TEST 2	—	Not used, connected to GND
55	V <sub>SS</sub>	—	GND terminal
56	RAD C	O	RAM address bus terminal
57	RAD E		
58	NWE	O	Write enable for memory
59	RAD D	O	RAM address bus terminal
60	RAD 8		
61	RAD 9		
62	RAD B	O	Output enable for memory
63	NOE		
64	RAD A	O	RAM address bus terminal
65	V <sub>DD</sub>	I	Power supply terminal
66	NCS	O	Chip select terminal for memory

Pin No.	Mark	I/O Division	Function
67	V <sub>SS</sub>	—	GND terminal
68	RDT 7	I/O	RAM data bus terminal
69	RDT 6		
70	RDT 5		
71	RDT 4		
72	RDT 3		
73	RDT 2		
74	RDT 1		
75	RDT 0		
76	V <sub>SS</sub>	—	GND terminal
77	TEST 3	—	Not used, connected to GND
78	V <sub>DD</sub>	I	Power supply terminal
79	SPDT 7	I/O	Address and data bus terminal
80	SPDT 6		
81	SPDT 5		
82	SPDT 4		
83	SPDT 3		
84	SPDT 2		
85	SPDT 1		
86	SPDT 0		
87	V <sub>SS</sub>	—	GND terminal
88	TEST 4	—	Not used, connected to GND
89	V <sub>DD</sub>	I	Power supply terminal
90	SPAW	I	Signal processor address setting terminal
91	SPSTB	I	Signal processor strobe signal
92	SPRDY	O	Data transfer command signal
93	UNLOK	O	PLL unlock signal
94	DISYND	—	Not used, open
95	NSTBY	I	Not used, connected to power supply

Pin No.	Mark	I/O Division	Function
96	NRST	I	Reset signal
97	M7CK	—	Master clock signal (Not used, open)
98	R6CP/(ENVT)	O	Timing signal for RF envelope signal control
99	R3CP		
100	V <sub>SS</sub>	—	GND terminal
101	SRRF	O	Recording signal
102	V <sub>DD</sub>	I	Power supply terminal
103	SRPR	O	Recording/playback select signal (REC: "H", PLAY: "L")
104	SRWND 2	O	ATF area det. signal
105	SRWND 1	O	Track pitch signal
106	PBDT	I	Playback signal
107	PBCK	I	Playback envelope signal
108	RFMSK	—	Not used, open
109	PLLOFS	O	PLL off-set information signal
110	HFCH	O	System clock signal
111	VFPLFS	O	PLL OFS effective information signal
112	EXFCH	—	Not used, connected to GND
113	EEMD	—	Not used, connected to GND
114	V <sub>SS</sub>	—	GND terminal
115	SL NRZI	—	Not used, connected to GND
116	SELF CH0		
117	SELF CH1	—	Not used, connected to GND
118	V <sub>DD</sub>	I	Power supply terminal
119	M9CP	O	Master clock signal
120	HSW	I	Head switching signal
121	NR TRST	I	Not used, connected to power supply
122	SUBWND	—	Not used, open
123	IPF	O	Output terminal for flag counter (Not used, open)
124	SUBC 1		

**• IC305 (SM5843AS1): Digital filter**

Pin No.	Mark	I/O Division	Function
1	DI/ $\overline{\text{INF2}}$	I	Input data (INF1N: "L") Input format select 2 (INF1N: "H")
2	BCKI	I	Serial bit clock input terminal
3	$\overline{\text{CKSL}}$	I	Clock input frequency select terminal ("H": 384 fs, "L": 256 fs)
4	$\overline{\text{INF1}}$	I	Input format select 1
5	$\overline{\text{IW1}}/\text{DIL}$	I	Input bit select 1 (INF1N: "L") L ch data input (INF1N: "H")
6	XTI	I	Clock input terminal
7	XTO	O	Clock output terminal (Not used, open)
8	V <sub>SS</sub>	—	GND terminal
9	CKO	O	Clock output terminal (Not used, open)
10	$\overline{\text{IW2}}/\text{DIR}$	I	Input bit select 2 (INF1N: "L") R ch data input (INF1N: "H")
11	MDT	I	Attenuation command serial data input terminal
12	MCK	I	Attenuation command bit clock input terminal
13	$\overline{\text{MLE}}$	I	Attenuation command latch clock input terminal
14	$\overline{\text{RST}}$	I	System reset terminal ("L": Active)

Pin No.	Mark	I/O Division	Function															
15	MUTE	I	Muting control terminal ("H": Mute)															
16	DEMP	I	Digital de-emphasis ON/OFF ("H": ON)															
17	FSEL1	I	De-emphasis filter select terminal <table><tr><td>fs (Hz)</td><td>32 k</td><td>44.1 k</td><td>48 k</td><td>Test</td></tr><tr><td>FSEL1</td><td>H</td><td>L</td><td>L</td><td>H</td></tr><tr><td>FSEL2</td><td>H</td><td>L</td><td>H</td><td>L</td></tr></table>	fs (Hz)	32 k	44.1 k	48 k	Test	FSEL1	H	L	L	H	FSEL2	H	L	H	L
fs (Hz)	32 k		44.1 k	48 k	Test													
FSEL1	H		L	L	H													
FSEL2	H	L	H	L														
18	FSEL2																	
19	$\overline{\text{OW2O}}$	I	Output bit select terminal ("H": 18 bit, "L": 20 bit)															
20	$\overline{\text{SYNC}}$	I	Synchronizing mode select ("L": Forced mode, "H": Jitter free mode)															
21	NC	—	No connected, open															
22	V <sub>DD</sub>	I	Power supply terminal															
23	DOR	O	R ch data output															
24	DOL	O	L ch data output															
25	WCKO	O	Word clock output															
26	BCKO	O	Serial bit clock output terminal															
27	TMOD	I	Filter response select ("H": Response 1, "L": Response 2)															
28	LRCI	I	Sample rate (fs) clock signal															

**• IC507, 508 (PCM1702P): D/A converter**

Pin No.	Mark	I/O Division	Function
1	DATA	I	Serial data
2	CLOCK	I	Bit clock
3	+V <sub>DD</sub>	I	Digital +5 V power supply
4	DGND	I	Digital GND terminal
5	−V <sub>DD</sub>	I	Digital −5 V power supply
6	LE	I	Latch enable
7	NC	—	Not used, open
8	NC	—	Not used, open

Pin No.	Mark	I/O Division	Function
9	+V <sub>CC</sub>	I	Analog +5 V power supply
10	BPO DC	I/O	Bpo decouple
11	IOUT	O	Current out
12	AGND	I	Analog GND terminal
13	AGND	I	Analog GND terminal
14	SERV	I/O	Servo decouple
15	REF	I/O	Ref decouple
16	−V <sub>CC</sub>	I	Analog −5 V power supply

## • IC601 (M50754-165FP): Panel control &amp; FL drive

Pin No.	Mark	I/O Division	Function	Pin No.	Mark	I/O Division	Function
1	V <sub>SS</sub>	—	GND terminal	35	VP	I	Power supply terminal for FL drive
2	P 27	O	Input select signal (DIGITAL ↔ ANALOG)	36	P 51	O	Segment signal for FL drive
3	P 26	O	LED display drive terminal (PAUSE)	37	P 50		
4	P 25	O	LED display drive terminal (REC)	38 } 45 } P 17 } P 10 }			
5	P 24	O	LED display drive terminal (PLAY)	46	NC		
6 } 8 } P 23 } P 21 }	I	I	Key return signal	47	P 07	O	Segment signal for FL drive
9	P 20	O	Buffer control signal	48	P 06		
10	NC	—	Not connection	49	P 05		
11	NPRDY	O	Ready signal	50	P 04		
12	NTRCLK	I/O	Serial data transmission/reception clock signal	51	P 03		
13	RXD	O	Serial data transmission signal	52	P 02		
14	TXD	I	Serial data reception signal	53	P 01		
15	P 33	O	Not connection	54	P 00		
16	P 32	—		55	P 47		
17	P 31	O	LED display drive terminal (S. PLAY)	56	P 46		
18	P 30	O	LED display drive terminal (A. PNO)	57	P 45		
19	INT 1	I	Remote control signal	58	P 44		
20	INT 2	I	Not used, connected to power supply	59	P 43		
21	CNV <sub>SS</sub>	—	GND terminal	60	P 42		
22	RST	I	Reset signal ("L": RESET)	61	P 41		
23	NC	—	Not connection	62	P 40		
24	X IN	I	Master clock terminal (6 MHz)	63	V <sub>CC</sub>	I	Power supply terminal
25	X OUT	O		64	V <sub>CC</sub>		
26	NC	—	Not connection	65	V <sub>SS</sub>	—	GND terminal
27	X CIN	—	Not used, connected to GND	66	P 65	O	Digit signal for FL drive and key scan signal
28	X COUT	—	Not used, open	67	P 64		
29	V <sub>SS</sub>	—	GND terminal	68	P 63		
30	NC	—	Not connection	69	P 62		
31	P 57	I	Key return signal	70	P 61		
32	P 56			71	P 60		
33	P 55			72	NC	—	Not connection
34	P 54						

• IC405 (AK5339-VP): A/D converter

Pin No.	Mark	I/O Division	Function
1	A. GND	—	Analog GND terminal
2	AINL	I	Analog data (L ch) signal
3	ZEROL	I	Not used, connected to GND
4	VA+	I	Power supply terminal (+)
5	VA—	I	Power supply terminal (—)
6	APD	I	Reset signal
7	ACAL	I	Not used, connected to GND
8	NC	—	Not used, open
9	DCAL	O	Relay control terminal
10	DPO	I	Reset signal
11	TST	—	Not used, connected to GND
12	CMODE	—	Not used, connected to GND
13	SMODE	—	Not used, connected to GND
14	L/R	I/O	L/R discrimination signal

Pin No.	Mark	I/O Division	Function
15	SCLK	I/O	Serial bit clock output terminal
16	SDATA	O	Digital data signal
17	FSYNC	I	Not used, connected to power supply
18	VD+	I	Power supply terminal
19	D. GND	—	Digital GND terminal
20	CLK	I	Clock input terminal
21	OCLK	O	Clock output terminal
22	NC	—	Not used, open
23	ICLK	I	Clock input terminal
24	LGND	—	GND terminal
25	VL+	I	Power supply terminal (+)
26	ZEROR	—	Not used, connected to GND
27	AINR	I	Analog data (R ch) signal
28	VREF	O	Reference voltage terminal



## ■ KEY POINTS FOR TROUBLESHOOTING

### Mechanism block

Loading mechanism  
   Post roller  
   Tension regulator  
   Pinch roller  
   Brake lever  
 Brake mechanism  
   Brake lever  
   Solenoid  
   Solenoid driver  
 Mechanism switch block  
   Tape hole detection switch  
   Cassette detection switch  
   Holder switch  
 Reel FG block  
   Detection photo transistor  
   Detection LED  
   Reel FG amp (servo P.C.B.)  
 FPC & FPC connector

### Power supply block

Power supply regulator output  
 Fuse

### Capstan block

Capstan FG  
 FG amp  
 Motor driver output  
 Motor current

### Cylinder block

Cylinder FG  
 Cylinder PG  
 FG amp  
 PG amp  
 Motor driver output  
 Motor current

### Mode motor block

Mode motor  
 Mode switch  
 Mode motor driver circuit

### ATF block

RF ATF output  
   ATF SYNC output  
 ATF select circuit  
 ATF gate alloy

### Master clock block

28MHz oscillator  
 16MHz, 22MHz, 24MHz oscillate and select circuit

### Signal processor block

Data & clock to D/A  
 Data & clock to A/D  
 All clocks

### Panel switch block

Switch  
 Panel control IC

### Digital output block

Digital output PB

### Head, RF block

Head FPC & FPC connector  
 Head dirty  
 Head cracked or damaged  
 RF recording current  
 Playback eye pattern

### Panel control block

Panel control block  
 Transfer between panel and system control  
 Panel control reset

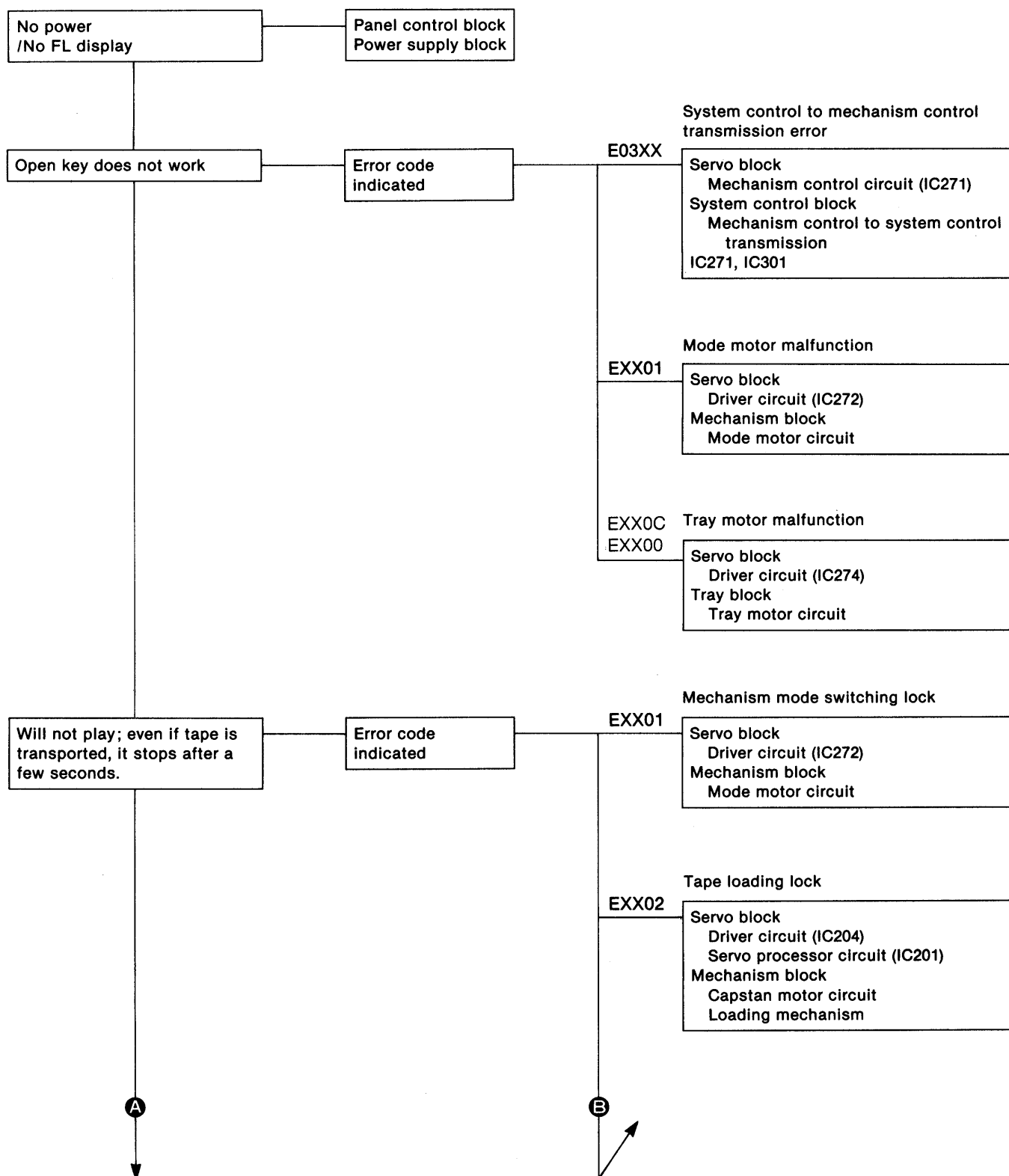
### Tape begin/end detection block

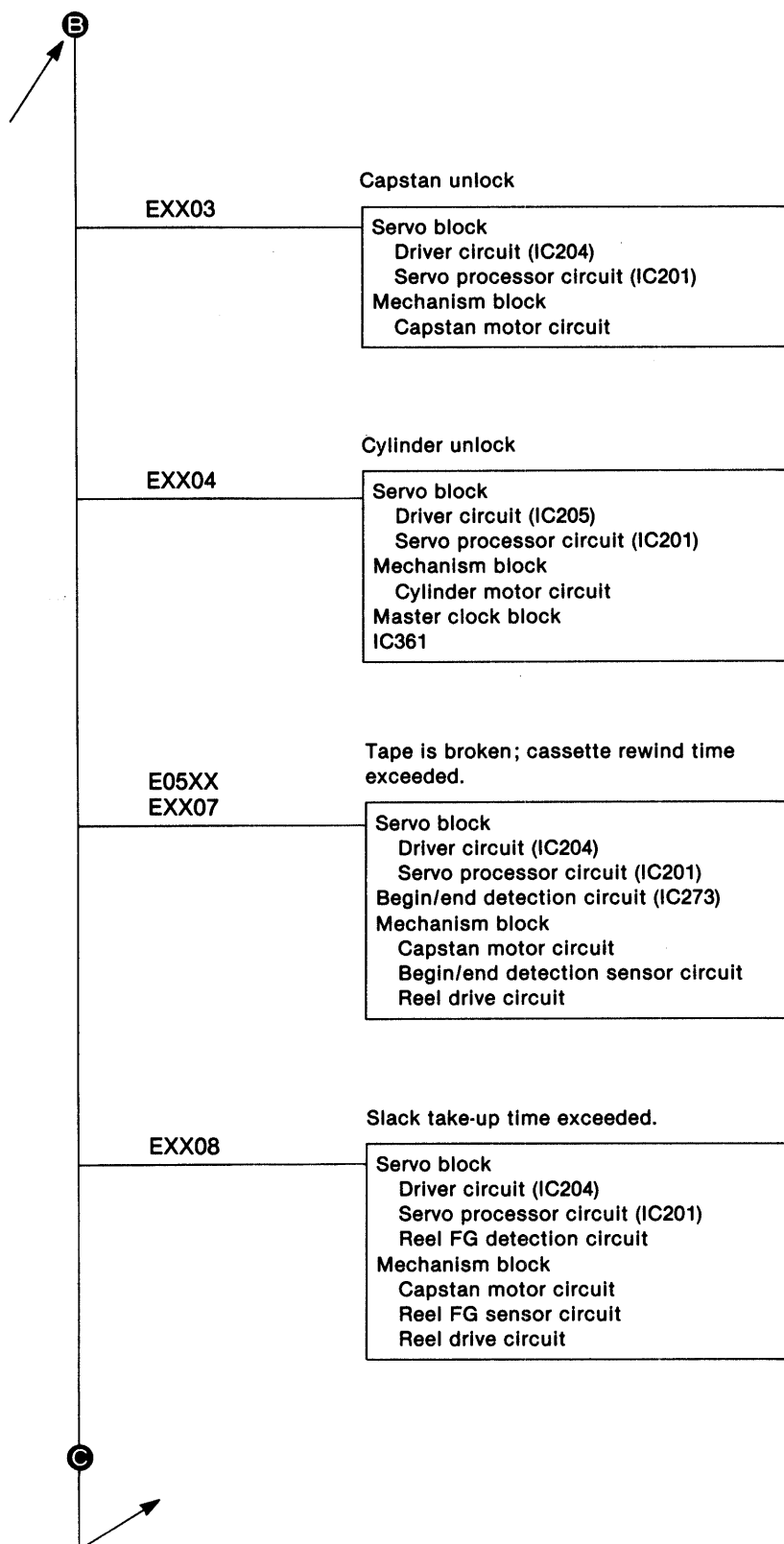
Begin/end detection photo transistor  
 Begin/end detection LED  
 Comparator circuit  
 FPC & FPC connector

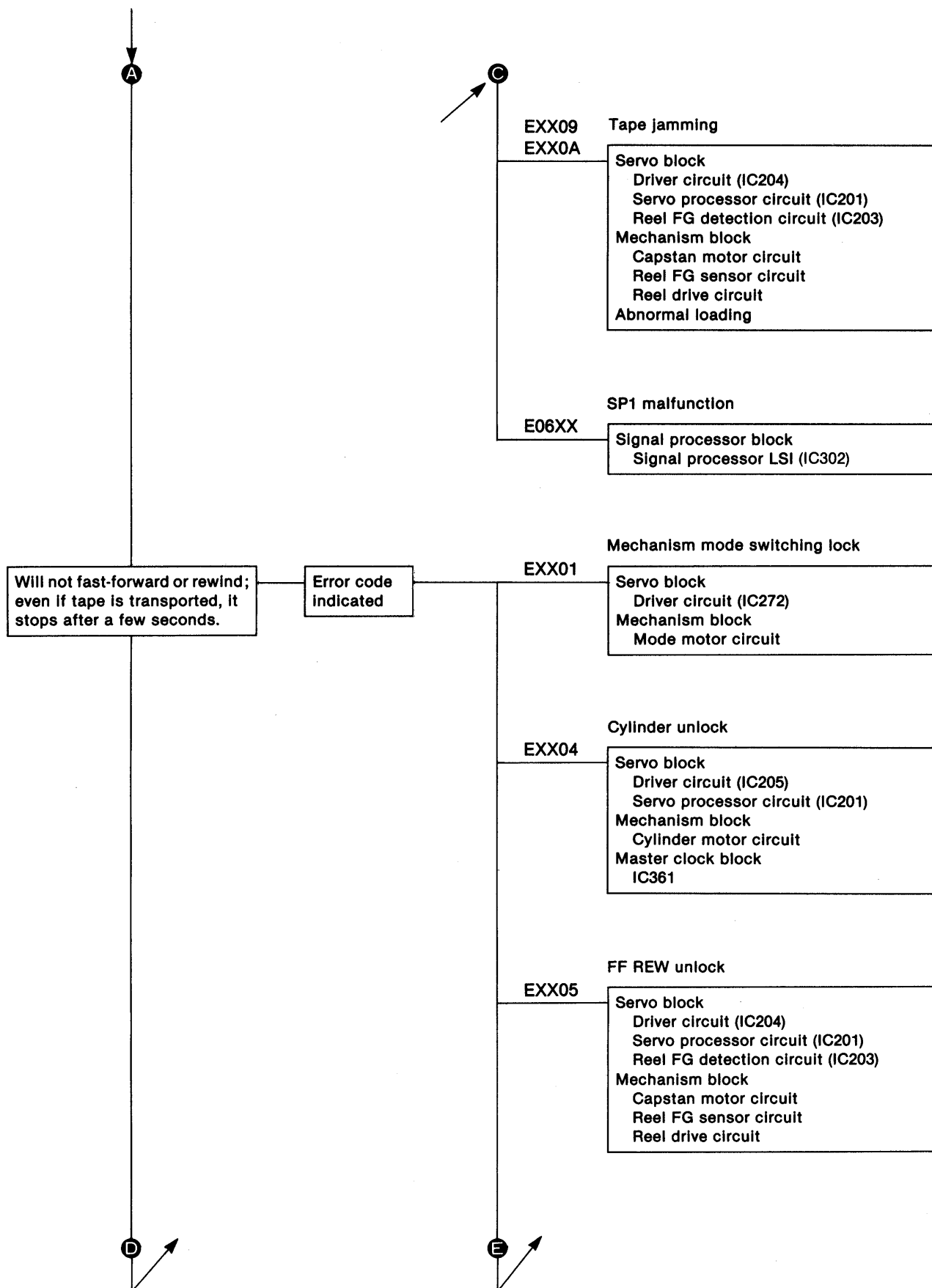
### Analog block

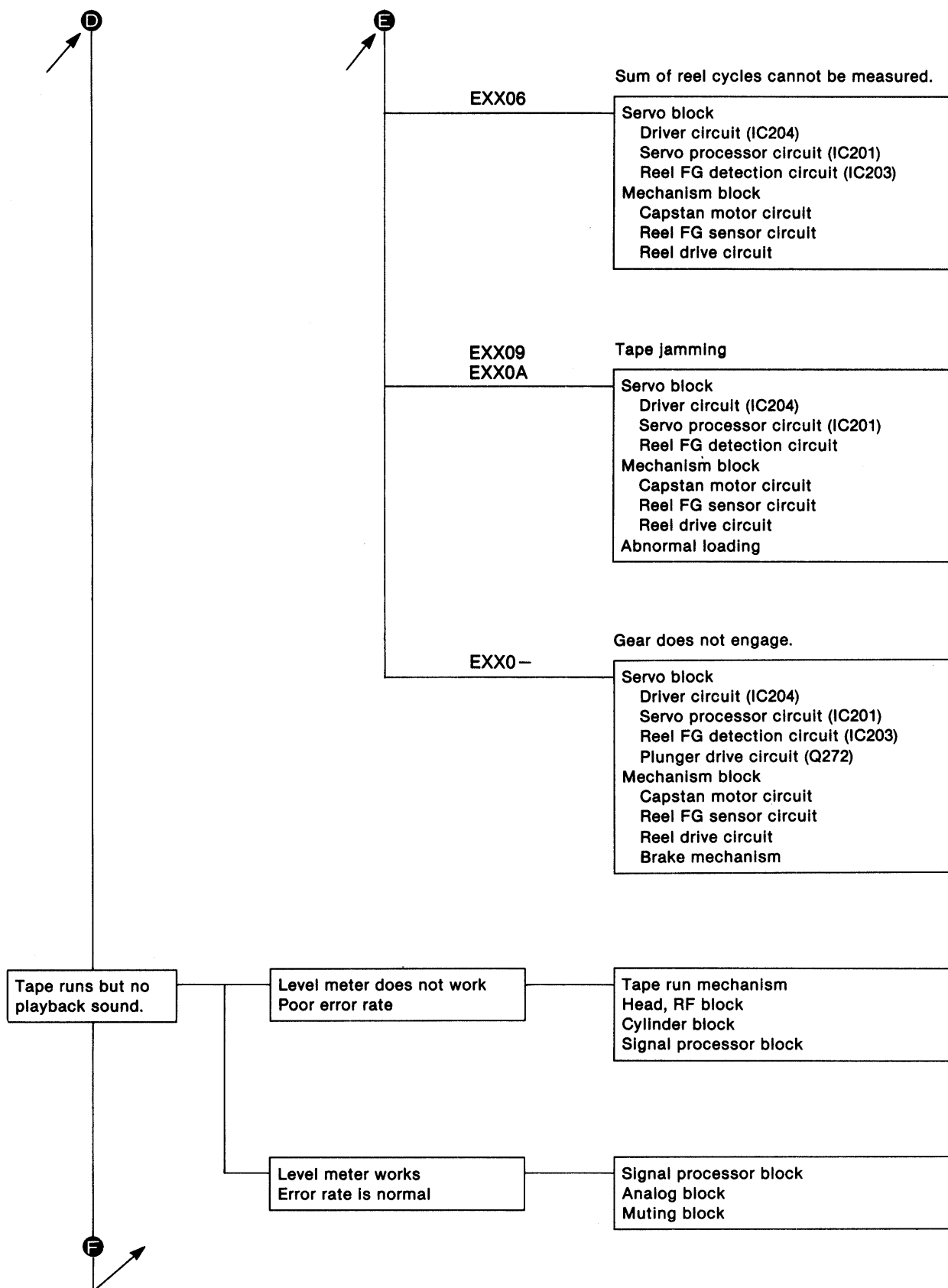
Input amplifier  
 Output amplifier  
 Muting circuit  
 A/D converter  
 D/A converter

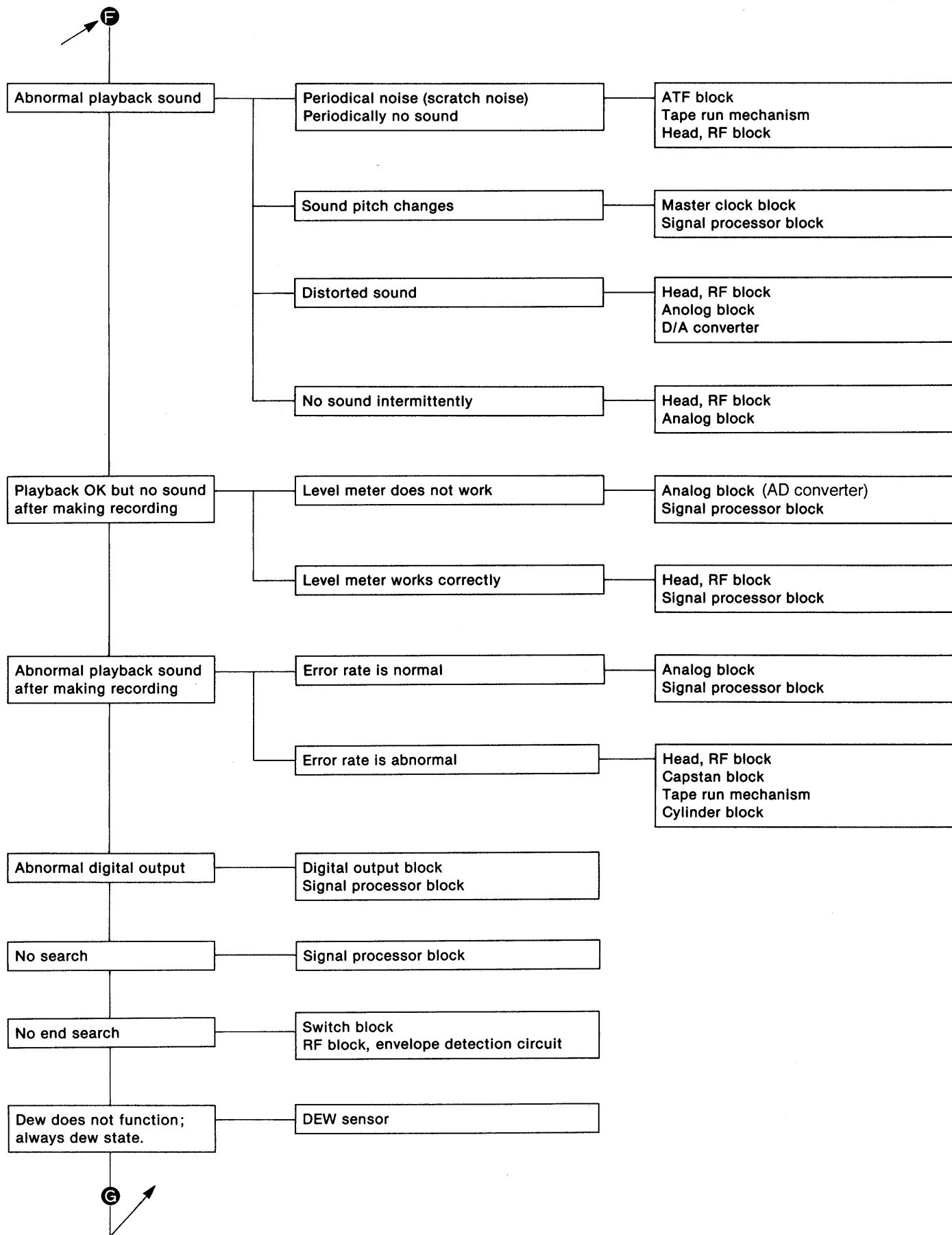
# TROUBLESHOOTING

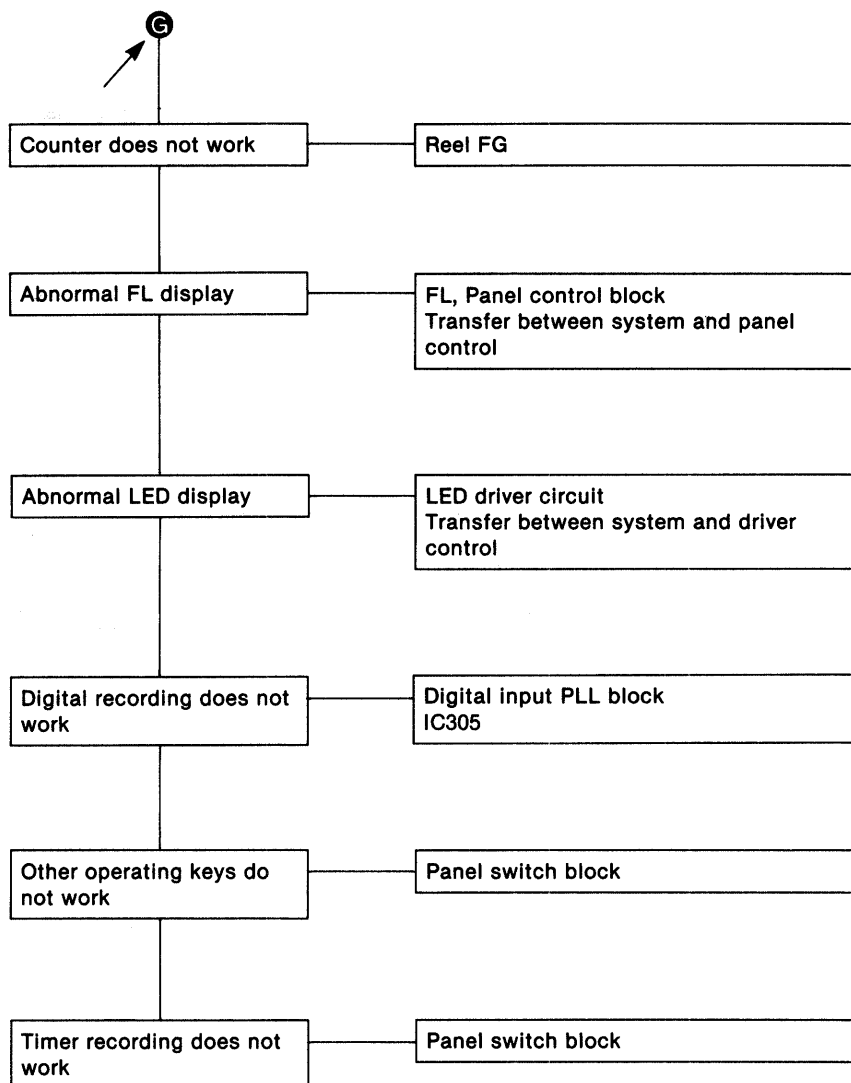












## PARTS SECTION

1. Be sure to make your orders of replacement parts according to this list.
2. **IMPORTANT SAFETY NOTICE**  
 Components identified by "<!>" have special characteristics important for safety.  
 When replacing any of these components, use only the original ones.  
 Meaning of symbol "<!>" on this parts list is exactly the same as symbol  $\triangle$  on Schematic and Circuit Board Diagrams.
3. Unless otherwise specified;  
 All resistors are in ( $\Omega$ ), K=1,000 $\Omega$ , M=1,000k $\Omega$ .  
 All capacitors are in (F), U=10<sup>-6</sup>F, P=10<sup>-12</sup>F.
4. **ITEM NUMBERS WITH CAPITAL LETTER E**  
 Item numbers with capital letter E (Example: E1, E2, ..... ) in Ref. no. column mean that the parts are listed with the E item numbers in the exploded views.
5. When ordering parts, use parts No. only from Part No. column.
6. Printed circuit board assembly with mark (RTL) is no longer available after discontinuation of the product.

# RESISTORS AND CAPACITORS

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		RESISTORS							
R11	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	1		R240	ERJ6GEYJ151	M.RESISTOR CH1/10W 150	1	
R12	ERDS2TJ101	C.RESISTOR 1/4W 100	1		R241	ERJ6GEYJ333	M.RESISTOR 1/10W 33K	1	
R13	ERDS2TJ473	C.RESISTOR 1/4W 47K	1		R242	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1	
R15,16	ERG1ANJP560	M.RESISTOR 1W 56	2		R243	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1	
R21,22	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	2		R244	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1	
R23,24	ERJ6GEYJ471	M.RESISTOR 1/10W 470	2		R245	ERX125JR33E	M.RESISTOR 1/2W 0.33	1	
R101,102	ERJ6GEYJ221	M.RESISTOR 1/10W 220	2		R247	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	1	
R103,104	ERJ6GEYJ681	M.RESISTOR CH1/10W 680	2		R248	ERJ6GEYJ822	M.RESISTOR CH1/10W 8.2K	1	
R112,113	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	2		R249	ERJ6GEYJ472	M.RESISTOR CH1/10W 4.7K	1	
R115	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	1		R250	ERJ6GEYJ153	M.RESISTOR 1/10W 15K	1	
R117	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R251	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	1	
R118	ERJ6GEYJ471	M.RESISTOR 1/10W 470	1		R271,272	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	2	
R123	ERJ6GEYJ822	M.RESISTOR CH1/10W 8.2K	1		R273	ERJ6GEYJ681	M.RESISTOR CH1/10W 680	1	
R124	ERJ6GEYJ152	M.RESISTOR CH1/10W 1.5K	1		R274	ERSB39JR82U	T.RESISTOR 1/4W 0.82	1	
R126	ERJ6GEYJ152	M.RESISTOR CH1/10W 1.5K	1		R275	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1	
R128	ERJ6GEYJ822	M.RESISTOR CH1/10W 8.2K	1		R277,278	ERJ6GEYJ333	M.RESISTOR 1/10W 33K	2	
R131	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	1		R279	ERJ6GEYJ683	M.RESISTOR 1/10W 68K	1	
R132,133	ERJ6GEYJ221	M.RESISTOR 1/10W 220	2		R280	ERJ6GEYJ333	M.RESISTOR 1/10W 33K	1	
R134	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R281	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	1	
R135,136	ERJ6GEYJ471	M.RESISTOR 1/10W 470	2		R282	ERJ6GEYJ682	M.RESISTOR CH1/10W 6.8K	1	
R150	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R284	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1	
R151,152	ERJ6GEYJ471	M.RESISTOR 1/10W 470	2		R285	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	1	
R153	ERJ6GEYJ223	M.RESISTOR 1/10W 22K	1		R286	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1	
R154,155	ERJ6GEYJ471	M.RESISTOR 1/10W 470	2		R287	ERJ6GEYJ684	M.RESISTOR 1/10W 680K	1	
R156,157	ERJ6GEYJ222	M.RESISTOR CH1/10W 2.2K	2		R289,290	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	2	
R158	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R292,293	ERJ6GEYJ563	M.RESISTOR CH1/10W 56K	2	
R159	ERJ6GEYJ223	M.RESISTOR 1/10W 22K	1		R294-296	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	3	
R160	ERJ6GEYJ221	M.RESISTOR 1/10W 220	1		R297	ERJ6GEYJ220	M.RESISTOR CH1/10W 22	1	
R162	ERJ6GEYJ472	M.RESISTOR CH1/10W 4.7K	1		R298	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1	
R164,165	ERJ6GEYJ472	M.RESISTOR CH1/10W 4.7K	2		R301-309	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	9	
R167	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	1		R310-313	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	4	
R168	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R314-319	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	6	
R169	ERJ6GEYJ471	M.RESISTOR 1/10W 470	1		R321-330	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	10	
R172	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R331-338	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	8	
R173,174	ERJ6GEYJ222	M.RESISTOR CH1/10W 2.2K	2		R339	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	1	
R175	ERJ6GEYJ151	M.RESISTOR CH1/10W 150	1		R340	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1	
R176	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	1		R341	ERJ6GEYJ153	M.RESISTOR 1/10W 15K	1	
R178	ERJ6GEYJ820	M.RESISTOR CH1/10W 82	1		R342	ERJ6GEYJ183	M.RESISTOR 1/10W 18K	1	
R181	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	1		R343	ERJ6GEYJ683	M.RESISTOR 1/10W 68K	1	
R193-195	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	3		R344	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1	
R196	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1		R345-347	ERJ6GEYJ822	M.RESISTOR CH1/10W 8.2K	3	
R197	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R348	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1	
R201	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R349	ERJ6GEYJ393	M.RESISTOR CH1/10W 39K	1	
R202,203	ERJ6GEYJ223	M.RESISTOR 1/10W 22K	2		R350	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1	
R204	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1		R351-353	ERJ6GEYJ561	M.RESISTOR 1/10W 560	3	
R205	ERJ6GEYJ683	M.RESISTOR 1/10W 68K	1		R354	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	1	
R206	ERJ6GEYJ684	M.RESISTOR 1/10W 680K	1		R355	ERJ6GEYJ561	M.RESISTOR 1/10W 560	1	
R207	ERJ6GEYJ472	M.RESISTOR CH1/10W 4.7K	1		R356-364	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	9	
R208	ERJ6GEYJ683	M.RESISTOR 1/10W 68K	1		R365,366	ERJ6GEYJ561	M.RESISTOR 1/10W 560	2	
R209	ERJ6GEYJ153	M.RESISTOR 1/10W 15K	1		R367	ERJ6GEYJ105	M.RESISTOR CH1/10W 1M	1	
R210	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R368-371	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	4	
R212	ERJ6GEYJ105	M.RESISTOR CH1/10W 1M	1		R372,373	ERJ6GEYJ561	M.RESISTOR 1/10W 560	2	
R213	ERJ6GEYJ274	M.RESISTOR CH1/10W 270K	1		R374,375	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	2	
R214	ERJ6GEYJ682	M.RESISTOR CH1/10W 6.8K	1		R378-380	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	3	
R215	ERJ6GEYJ184	M.RESISTOR CH1/10W 180K	1		R381,382	ERDS2TJ221	C.RESISTOR 1/4W 220	2	
R216	ERJ6GEYJ101	C.RESISTOR 1/10W 100	1		R383,384	ERDS2TJ101	C.RESISTOR 1/4W 100	2	
R217,218	ERJ6GEYJ472	M.RESISTOR CH1/10W 4.7K	2		R385,386	ERJ6GEYJ153	M.RESISTOR 1/10W 15K	2	
R219,220	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	2		R387,388	ERJ6GEYJ270	M.RESISTOR CH1/10W 27	2	
R221,222	ERJ6GEYJ474	M.RESISTOR CH1/10W 470K	2		R389	ERDS2TJ103	C.RESISTOR 1/4W 10K	1	
R223,224	ERJ6GEYJ222	M.RESISTOR CH1/10W 2.2K	2		R390	RRJ6GCAD750T	M.RESISTOR CH1/10W 75	1	
R225,226	ERJ6GEYJ184	M.RESISTOR CH1/10W 180K	2		R391	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1	
R227	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	1		R392	ERJ6GEYJ334	M.RESISTOR CH1/10W 330K	1	
R228	ERJ6GEYJ222	M.RESISTOR CH1/10W 2.2K	1		R393	ERJ6GEYJ470	M.RESISTOR CH1/10W 47	1	
R229	ERJ6GEYJ103	M.RESISTOR CH1/10W 10K	1		R394	ERJ6GEYJ100	M.RESISTOR CH1/10W 10	1	
R230	ERJ6GEYJ681	M.RESISTOR CH1/10W 680	1		R395	RRJ6GCAD750T	M.RESISTOR CH1/10W 75	1	
R231	ERJ6GEYJ821	C.RESISTOR 1/10W 820	1		R396	ERJ6GEYJ470	M.RESISTOR CH1/10W 47	1	
R232	ERJ6GEYJ333	M.RESISTOR 1/10W 33K	1		R397	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1	
R233	ERJ6GEYJ393	M.RESISTOR CH1/10W 39K	1		R398	ERDS2TJ331	C.RESISTOR 1/4W 330	1	
R234	ERJ6GEYJ333	M.RESISTOR 1/10W 33K	1		R399	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1	
R235	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1		R401,402	RRJ6GCAD183T	M.RESISTOR CH1/10W 18K	2	
R236	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	1		R403-410	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	8	
R237	ERX125JR33E	M.RESISTOR 1/2W 0.33	1		R411-416	RRJ6GCAD472T	M.RESISTOR CH1/10W 4.7K	6	
					R417-420	RRJ6GCAD103T	M.RESISTOR CH1/10W 10K	4	
					R421-424	RRJ6GCAD472T	M.RESISTOR CH1/10W 4.7K	4	
					R425,426	ERDS2TJ101	C.RESISTOR 1/4W 100	2	



Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R435, 436	ERDS2TJ473	C.RESISTOR 1/4W 47K	2						
R437, 438	RRJ6GCAD103T	M.RESISTOR CH1/10W 10K	2				CAPACITORS		
R439, 440	RRJ6GCAD472T	M.RESISTOR CH1/10W 4.7K	2						
R441, 442	RRJ6GCAD273T	M.RESISTOR CH1/10W 27K	2		C1	ECKWRS102MBY	C.CAPACITOR 400V 0.01U	1	<I>
R443, 444	ERJ6GEYJ470	M.RESISTOR CH1/10W 47	2		C11-20	ECKF1H103ZF	C.CAPACITOR 50V 0.01U	10	
R445, 446	ERJ6GEYJ225	M.RESISTOR CH1/10W 2.2M	2		C21, 22	ECEA1EP2332	E.CAPACITOR 25V 3300U	2	<I>
R447	ERJ6GEYJ331	M.RESISTOR CH1/10W 330	1		C23	ECE1EU682G	E.CAPACITOR 25V 680U	1	<I>
R448	ERJ6GEYJ561	M.RESISTOR 1/10W 560	1		C24	ECEA1CU472	E.CAPACITOR 16V 4700U	1	<I>
R449, 450	ERJ6GEYJ225	M.RESISTOR CH1/10W 2.2M	2		C25	ECEA1HU221	E.CAPACITOR 50V 220U	1	
R451-454	RRJ6GCAD472T	M.RESISTOR CH1/10W 4.7K	4		C26-29	ECEA1CU100	E.CAPACITOR 16V 10U	4	
R455-458	RRJ6GCAD562T	M.RESISTOR CH1/10W 5.6K	4		C32	ECKF1H103ZF	C.CAPACITOR 50V 0.01U	1	
R459-462	RRJ6GCAD332T	M.RESISTOR CH1/10W 3.3K	4		C41, 42	ECEA1CU101	E.CAPACITOR 16V 100U	2	
R463, 464	ERJ6GEYJ820	M.RESISTOR CH1/10W 82	2		C43	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	1	
R465	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	1		C44, 45	ECEA1CU101	E.CAPACITOR 16V 100U	2	
R501-504	ERDS2TJ103	C.RESISTOR 1/4W 10K	4		C46	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	1	
R505-508	ERDS2TJ331	C.RESISTOR 1/4W 330	4		C47, 48	ECEA0JU101	E.CAPACITOR 6.3V 100U	2	
R509-512	ERJ6GEYJ470	M.RESISTOR CH1/10W 47	4		C49, 50	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	2	
R513, 514	RRJ6GCAD183T	M.RESISTOR CH1/10W 18K	2		C101, 102	ECUM1H222KBN	C.CAPACITOR 50V 2200P	2	
R515, 516	ERJ6GEYJ394	M.RESISTOR CH1/10W 390K	2		C103, 104	ECUM1H471KCN	C.CAPACITOR CH 50V 470P	2	
R517, 518	RRJ6GCAD183T	M.RESISTOR CH1/10W 18K	2		C105	ECUM1H470JCN	C.CAPACITOR CH 50V 47P	1	
R519, 520	ERJ6GEYJ394	M.RESISTOR CH1/10W 390K	2		C107	ECUM1H222KBN	C.CAPACITOR 50V 2200P	1	
R521-524	RRJ6GCAD822T	M.RESISTOR CH1/10W 8.2K	4		C110	ECEA0JK221	E.CAPACITOR 6.3V 220U	1	
R525, 526	RRJ6GCAD183T	M.RESISTOR CH1/10W 18K	2		C123	ECUM1C105ZFM	C.CAPACITOR 16V 1U	1	
R527, 528	ERJ6GEYJ124	M.RESISTOR CH1/10W 120K	2		C124, 125	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	2	
R529-536	RRJ6GCAD822T	M.RESISTOR CH1/10W 8.2K	8		C126, 127	ECUM1H470JCN	C.CAPACITOR CH 50V 47P	2	
R537, 538	ERDS2TJ473	C.RESISTOR 1/4W 47K	2		C129, 130	ECEA0JKS220	E.CAPACITOR 6.3V 22U	2	
R541, 542	RRJ6GCAD562T	M.RESISTOR CH1/10W 5.6K	2		C131	ECUM1H222KBN	C.CAPACITOR 50V 2200P	1	
R543, 544	RRJ6GCAD332T	M.RESISTOR CH1/10W 3.3K	2		C150	ECUM1H471KCN	C.CAPACITOR CH 50V 470P	1	
R545, 546	RRJ6GCAD472T	M.RESISTOR CH1/10W 4.7K	2		C151	ECUM1H222KBN	C.CAPACITOR 50V 2200P	1	
R547, 548	RRJ6GCAD122T	M.RESISTOR CH1/10W 1.2K	2		C152	ECUM1H102KBN	C.CAPACITOR 50V 1000P	1	
R549, 550	ERJ6GEYJ105	M.RESISTOR CH1/10W 1M	2		C154	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
R551, 552	ERJ6GEYJ102	C.RESISTOR 1/10W 1K	2		C155, 156	ECUM1H102KBN	C.CAPACITOR 50V 1000P	2	
R553, 554	ERJ6GEYJ473	C.RESISTOR 1/10W 47K	2		C157	ECUM1C105ZFM	C.CAPACITOR 16V 1U	1	
R555-558	ERJ6GEYJ472	M.RESISTOR CH1/10W 4.7K	4		C159	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	1	
R559, 560	RRJ6GCAD222T	M.RESISTOR CH1/10W 2.2K	2		C161	ECUM1H562KBN	C.CAPACITOR CH 50V 5600P	1	
R561, 562	RRJ6GCAD562T	M.RESISTOR CH1/10W 5.6K	2		C163	ECUM1H562KBN	C.CAPACITOR CH 50V 5600P	1	
R563-566	RRJ6GCAD272T	M.RESISTOR CH1/10W 2.7K	4		C166	ECUM1E153MBN	C.CAPACITOR CH 25V 0.015U	1	
R567, 568	RRJ6GCAD222T	M.RESISTOR CH1/10W 2.2K	2		C167	ECUM1H102KBN	C.CAPACITOR 50V 1000P	1	
R569, 570	ERJ6GEYJ104	M.RESISTOR CH1/10W 100K	2		C168	ECUM1H270JCN	C.CAPACITOR CH 50V 27P	1	
R573, 574	ERDS2TJ473	C.RESISTOR 1/4W 47K	2		C169	ECUM1H100JCN	C.CAPACITOR CH 50V 10P	1	
R575, 576	ERDS2TJ102	C.RESISTOR 1/4W 1K	2		C171, 172	ECUM1H680JCN	C.CAPACITOR CH 50V 68P	2	
R577, 578	ERDS2TJ103	C.RESISTOR 1/4W 10K	2		C173	ECUM1H471KCN	C.CAPACITOR CH 50V 470P	1	
R579, 580	ERDS2TJ123	C.RESISTOR 1/4W 12K	2		C174	ECUM1E104MBN	C.CAPACITOR CH 25V 0.1U	1	
R581, 582	ERDS2TJ104	C.RESISTOR 1/4W 100K	2		C175	ECUM1H472KBN	C.CAPACITOR CH 50V 4700P	1	
R583, 584	ERDAS3G100	C.RESISTOR 1/4W 10	2		C176	ECUM1E333MDN	C.CAPACITOR CH 25V 0.033U	1	
R585, 586	ERDAS3G330	C.RESISTOR 1/4W 33	2		C177, 178	ECUM1H101KCN	C.CAPACITOR CH 50V 100P	2	
R587, 588	ERDAS3G332	C.RESISTOR 1/4W 3.3K	2		C179	ECUM1E104MBN	C.CAPACITOR CH 25V 0.1U	1	
R589, 590	ERDAS3G102	C.RESISTOR 1/4W 1K	2		C181	ECUM1C105ZFM	C.CAPACITOR 16V 1U	1	
R591, 592	ERDS2EJ121	C.RESISTOR 1/4W 120	2		C185, 186	ECUM1H331KCN	C.CAPACITOR CH 50V 330P	2	
R593-596	ERDS2TJ222	C.RESISTOR 1/4W 2.2K	4		C187	ECUM1H470JCN	C.CAPACITOR CH 50V 47P	1	
R599	ERJ6GEYJ332	C.RESISTOR 1/10W 3.3K	1		C188	ECUM1H331KCN	C.CAPACITOR CH 50V 330P	1	
R601-604	ERDS2TJ472	C.RESISTOR 1/4W 4.7K	4		C190	ECUM1H180JCN	C.CAPACITOR CH 50V 18P	1	
R605	ERDS2TJ100	C.RESISTOR 1/4W 10	1		C201	ECEA0JK470	E.CAPACITOR 6.3V 47U	1	
R606-608	ERDS2TJ102	C.RESISTOR 1/4W 1K	3		C202	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1	
R610, 611	ERDS2TJ471	C.RESISTOR 1/4W 470	2		C203, 204	ECUM1H180JCN	C.CAPACITOR CH 50V 18P	2	
R612	ERDS2TJ102	C.RESISTOR 1/4W 1K	1		C205, 206	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	2	
R613-619	ERDS2TJ103	C.RESISTOR 1/4W 10K	7		C207	ECUM1H271KCN	C.CAPACITOR CH 50V 270P	1	
R620	ERDS2TJ471	C.RESISTOR 1/4W 470	1		C208	ECUM1H221KCN	C.CAPACITOR CH 50V 220P	1	
R621	ERDS2TJ105	C.RESISTOR 1/4W 1M	1		C209, 210	ECUM1E104MBN	C.CAPACITOR CH 25V 0.1U	2	
					C211	ECUM1H221KCN	C.CAPACITOR CH 50V 220P	1	
					C212, 213	ECEA1CK220	E.CAPACITOR 16V 22U	2	
					C214, 215	ECUM1H101KCN	C.CAPACITOR CH 50V 100P	2	
					C216, 217	ECUM1C105ZFM	C.CAPACITOR 16V 1U	2	
					C218, 219	ECUM1H390KCN	C.CAPACITOR CH 50V 39P	2	
					C220, 221	ECUM1H121KCN	C.CAPACITOR CH 50V 120P	2	
					C222, 223	ECUM1C105ZFM	C.CAPACITOR 16V 1U	2	
					C224	ECQV1H683JZ	P.CAPACITOR 50V 0.68U	1	
					C225, 226	ECUM1H332MBN	C.CAPACITOR CH 50V 3300P	2	
					C227	ECUM1E333MDN	C.CAPACITOR CH 25V 0.033U	1	
					C228	ECUM1H181KCN	C.CAPACITOR CH 50V 180P	1	
					C229	ECEA0JK221B	E.CAPACITOR 6.3V 220U	1	
					C230	ECEA0JK470	E.CAPACITOR 6.3V 47U	1	
					C231	ECEA1AU470	E.CAPACITOR 10V 47U	1	
					C232	ECEA1CK220	E.CAPACITOR 16V 22U	1	
					C233	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C234	ECEA1CK470	E.CAPACITOR 16V 47U	1		C443-447	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	5	
C235, 236	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	2		C448	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	1	
C237	ECUM1C105ZFM	C.CAPACITOR 16V 1U	1		C501-504	ECUM1H681KBN	C.CAPACITOR 50V 680P	4	
C238	ECUM1E223MBN	C.CAPACITOR CH 25V 0.022U	1		C505-508	ECEA1CP2221	E.CAPACITOR 16V 220U	4	
C239	ECUM1E683MBN	C.CAPACITOR CH 25V 0.068U	1		C509-512	ECUM1H150JCN	C.CAPACITOR CH 50V 15P	4	
C240	ECUM1E153MBN	C.CAPACITOR CH 25V 0.015U	1		C513, 514	ECEA1CU471	E.CAPACITOR 16V 470U	2	
C241	ECUM1E104MBN	C.CAPACITOR CH 25V 0.1U	1		C515, 516	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	2	
C242-246	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	5		C517	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1	
C247, 248	ECUM1E333MBN	C.CAPACITOR CH 25V 0.033U	2		C521, 522	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	2	
C249	ECUM1E153MBN	C.CAPACITOR CH 25V 0.015U	1		C523, 524	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	2	
C250	ECUM1E104MBN	C.CAPACITOR CH 25V 0.1U	1		C525, 526	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	2	
C251-253	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	3		C527, 528	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	2	
C260	ECUM1E334ZFM	C.CAPACITOR CH 25V 0.33U	1		C529-532	ECQB1H182JF	P.CAPACITOR 50V 1800P	4	
C268	ECUM1C105ZFM	C.CAPACITOR 16V 1U	1		C533, 534	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	2	
C269	ECUM1E103KBN	C.CAPACITOR 25V 0.01U	1		C535-538	ECEA0JP2221	E.CAPACITOR 6.3V 220U	4	
C270	ECEA0JK470	E.CAPACITOR 6.3V 47U	1		C539-542	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	4	
C271	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1		C543, 544	ECEA0JU470	E.CAPACITOR 6.3V 47U	2	
C272	ECUM1E223MBN	C.CAPACITOR CH 25V 0.022U	1		C545, 546	ECEA0JU101	E.CAPACITOR 6.3V 100U	2	
C273	ECUM1H101KCN	C.CAPACITOR CH 50V 100P	1		C547, 548	ECEA1CU220	E.CAPACITOR 16V 22U	2	
C274	ECUM1E103KBN	C.CAPACITOR 25V 0.01U	1		C550-552	ECQV1H104JZ	P.CAPACITOR 50V 0.1U	3	
C275	ECUM1C105ZFM	C.CAPACITOR 16V 1U	1		C553, 554	ECQT1H101KB	C.CAPACITOR 50V 100P	2	
C276	ECUM1H221KCN	C.CAPACITOR CH 50V 220P	1		C555, 556	ECQV1H104JZ	P.CAPACITOR 50V 0.1U	2	
C280	ECUM1C334ZFN	C.CAPACITOR CH 16V 0.33U	1		C561, 562	ECEA1CU220	E.CAPACITOR 16V 22U	2	
C301-303	ECEA0JU101	E.CAPACITOR 6.3V 100U	3		C563, 564	ECEA1CN100S	E.CAPACITOR 16V 10U	2	
C304	ECUM1H050CCN	C.CAPACITOR CH 50V 5P	1		C565, 566	ECEA1CP2221	E.CAPACITOR 16V 220U	2	
C305	ECUM1H102KBN	C.CAPACITOR 50V 1000P	1		C567-570	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	4	
C306	ECUM1H150JCN	C.CAPACITOR CH 50V 15P	1		C571-574	ECEA0JP2221	E.CAPACITOR 6.3V 220U	4	
C307, 308	ECUM1H040CCN	C.CAPACITOR CH 50V 4P	2		C575-578	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	4	
C309, 310	ECUM1H150JCN	C.CAPACITOR CH 50V 15P	2		C579, 580	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	2	
C311, 312	ECUM1H470JCN	C.CAPACITOR CH 50V 47P	2		C602, 603	ECEA0JK470	E.CAPACITOR 6.3V 47U	2	
C313	ECUM1E224ZFN	C.CAPACITOR CH 25V 0.22U	1		C604, 605	ECBT1E103ZF	C.CAPACITOR 25V 0.01U	2	
C314	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	1		C652	ECBT1H102KB	C.CAPACITOR 50V 1000P	1	
C317-338	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	22		C654	ECBT1H102KB	C.CAPACITOR 50V 1000P	1	
C339	ECEA0JU101	E.CAPACITOR 6.3V 100U	1		C655	ECEA1VK100B	E.CAPACITOR 35V 10U	1	
C340-342	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	3		C656	ECBT1H102KB	C.CAPACITOR 50V 1000P	1	
C343	ECUM1E473MBN	C.CAPACITOR 25V 0.047U	1		C657	ECEA0JK470	E.CAPACITOR 6.3V 47U	1	
C344	ECUM1H820JCN	C.CAPACITOR CH 50V 82P	1		C658	ECBT1E103ZF	C.CAPACITOR 25V 0.01U	1	
C345, 346	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	2		C659	ECEA1VK100	E.CAPACITOR 35V 10U	1	
C347	ECUM1H471JCN	C.CAPACITOR 50V 470P	1		C660	ECBT1E103ZF	C.CAPACITOR 25V 0.01U	1	
C348	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	1		C694	ECBT1E103ZF	C.CAPACITOR 25V 0.01U	1	
C349	ECUM1H681KBN	C.CAPACITOR 50V 680P	1		C751	ECXF1H103ZF	C.CAPACITOR 50V 0.01U	1	
C350	ECUM1H101KCN	C.CAPACITOR CH 50V 100P	1						
C351	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1						
C352	ECUM1H150JCN	C.CAPACITOR CH 50V 15P	1						
C371, 372	ECUM1E224ZFN	C.CAPACITOR CH 25V 0.22U	2						
C373, 374	ECUM1H470KCN	C.CAPACITOR 50V 47P	2						
C376	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	1						
C377, 378	ECUM1E224ZFN	C.CAPACITOR CH 25V 0.22U	2						
C379, 380	ECUM1H151KCN	C.CAPACITOR CH 50V 150P	2						
C381	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	1						
C382, 383	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	2						
C384	ECUM1H470KCN	C.CAPACITOR 50V 47P	1						
C385	ECUM1H103KBN	C.CAPACITOR CH 50V 0.01U	1						
C386	ECUM1H470KCN	C.CAPACITOR 50V 47P	1						
C387	ECUM1E224ZFN	C.CAPACITOR CH 25V 0.22U	1						
C388, 389	ECEA0JU330	E.CAPACITOR 6.3V 33U	2						
C390-393	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	4						
C401-404	ECUM1H221JCN	C.CAPACITOR CH 50V 220P	4						
C405-408	ECEA1CP2470B	E.CAPACITOR 16V 47U	4						
C409-416	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	8						
C417, 418	ECEA1CP2221	E.CAPACITOR 16V 220U	2						
C419, 420	ECUM1H103ZFN	C.CAPACITOR 50V 0.01U	2						
C421, 422	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	2						
C423-426	ECEA1CP2470	E.CAPACITOR 16V 47U	4						
C427, 428	ECUM1H220JCN	C.CAPACITOR CH 50V 22P	2						
C429, 430	ECQB1H562JF	P.CAPACITOR 50V 5600P	2						
C432, 433	ECEA0JP2221	E.CAPACITOR 6.3V 220U	2						
C434, 435	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	2						
C436	ECEA1CU100	E.CAPACITOR 16V 10U	1						
C437	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1						
C438	ECEA1CU220	E.CAPACITOR 16V 22U	1						
C439	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1						
C440	ECEA0JP2221	E.CAPACITOR 6.3V 220U	1						
C441	ECUM1E104ZFN	C.CAPACITOR 25V 0.1U	1						
C442	ECUM1H100CCN	C.CAPACITOR CH 50V 10P	1						

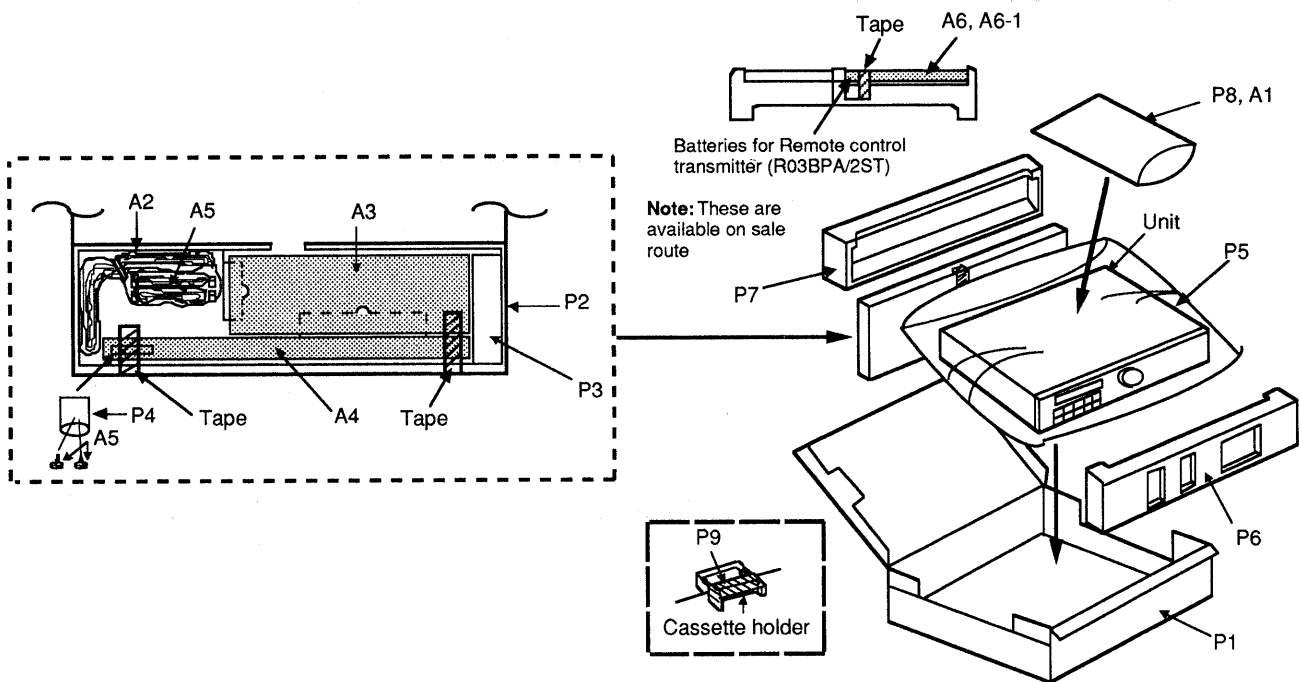
# REPLACEMENT PARTS LIST

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		INTEGRATED CIRCUIT(S)			Q403-410	2SD1450R	TRANSISTOR	8	
					Q501,502	2SC3311A-Q	TRANSISTOR	2	
					Q503	UN4212TA	TRANSISTOR	1	
IC9	M5F78M12L	IC	1	<I>	Q504-506	UN4112	TRANSISTOR	3	
IC10	M5F79M12L	IC	1	<I>	Q551-554	2SD1450R	TRANSISTOR	4	
IC11	AN7812F	IC	1	<I>	Q601-605	UN4111	TRANSISTOR	5	
IC12	AN7805F	IC	1	<I>					
IC101	AN7030SE2	IC	1				DIODE(S)		
IC102	AN7035SE2	IC	1						
IC201	MN6742SDR	IC	1		D11-20	1SR35200TB	DIODE	10	<I>
IC202	MN53020SDQ	IC	1		D21	MTZJ27D	DIODE	1	<I>
IC203	AN8320NFA	IC	1		D22	MTZJ3R9A	DIODE	1	<I>
IC204, 205	AN3841SR	IC	2		D23, 24	MA4056M	DIODE	2	<I>
IC206	M5228FPE2	IC	1		D25	MTZJ3R9A	DIODE	1	<I>
IC207	UPD74HC04GE2	IC	1		D201	MA701	DIODE	1	
IC208	MN4066BS	IC	1		D203	1N4606TR	DIODE	1	
IC209	AN78L05ME2	IC	1	<I>	D204	MA151A	DIODE	1	
IC271	MN17541SDN2	IC	1		D271	1S2473TR	DIODE	1	
IC272	AN6607NSE2	IC	1		D301-305	MA110	DIODE	5	
IC273	AN1339SE2	IC	1		D306	RVDSVC321	DIODE	1	
IC274	TA7291S	IC	1		D311-318	MA8056M	DIODE	8	
IC275	TC4581F	IC	1		D321-324	MA165	DIODE	4	
IC301	MNE321RRAA2	IC	1		D401, 402	MA719	DIODE	2	
IC302	MN6624	IC	1		D403-410	MA165	DIODE	8	
IC303	SRM2A256LM10	IC	1		D501, 502	MA165	DIODE	2	
IC304	S22S12IF10	IC	1		D503, 504	MA719	DIODE	2	
IC305	SM5843AS1	IC	1		D505, 506	MA165	DIODE	2	
IC306, 307	MC74HC273AF	IC	2		D507, 508	MA719	DIODE	2	
IC308	UPD74HC74GE2	IC	1		D509	MA165	DIODE	1	
IC309	UPD74HC163G	IC	1		D601-603	LN28RCPP-JF	DIODE	3	
IC310	MN1281-R	IC	1		D605	LN31GPH-JF2	DIODE	1	
IC311	UPD74HC00G	IC	1		D607	LN49YPH-JF1	DIODE	1	
IC312	T74HCU04AFTP	IC	1		D608	LN29RPH-JF1	DIODE	1	
IC313	M5238FPE1	IC	1		D611-628	MA165	DIODE	18	
IC314	MSM34050F	IC	1		D630-635	MA165	DIODE	6	
IC315	T74HCU04AF	IC	1		D637-643	MA165	DIODE	7	
IC316	MC74HC125AF	IC	1		D790	MA165	DIODE	1	
IC317	MC74HC126AF	IC	1		D2001, 2002	MA165	DIODE	2	
IC318	TORX178A	IC	1				VARIABLE RESISTOR(S)		
IC319	TOTX178	IC	1						
IC401-404	NJM4580ED	IC	4		VR104, 105	EVNDXAA00B53	VARIABLE RESISTOR	2	
IC405	AK5339-VP	IC	1		VR106	EVNDXAA00B14	VARIABLE RESISTOR	1	
IC501, 502	NJM5532DD	IC	2		VR107, 108	EVNDXAA00B13	VARIABLE RESISTOR	2	
IC503, 504	NJM4580ED	IC	2		VR201	EVNDXAA00B54	VARIABLE RESISTOR	1	
IC505, 506	M5238FP	IC	2		VR271	EVNDCAA03B54	VARIABLE RESISTOR	1	
IC507, 508	PCM1702P	IC	2		VR401, 402	EVJC20F03A24	VARIABLE RESISTOR	2	
IC551, 552	M5218L	IC	2		VR551	EVU57A022A14	VARIABLE RESISTOR	1	
IC601	M50754-165FP	IC	1		VR601	EVQWVS00004E	VARIABLE RESISTOR	1	
IC602	AN6873S	IC	1				COMPONENT COMBINATION(S)		
IC603	UPD74HC04G	IC	1						
		TRANSISTOR(S)			Z301, 302	EXCEMT471B	COMBINATION PART	2	
Q11	2SB1238QSTV6	TRANSISTOR	1	<I>			COIL(S)		
Q21	2SC3311A-Q	TRANSISTOR	1						
Q22	2SA1309A-R	TRANSISTOR	1		L1, 2	RLZ0026-0	COIL	2	<I>
Q23	2SD2037DEF	TRANSISTOR	1	<I>	L101	ELJFA470KF	COIL	1	
Q24	2SB1357DEF	TRANSISTOR	1	<I>	L104	ELJFA180KF	COIL	1	
Q102-105	UN5216-Q	TRANSISTOR	4		L106	ELJFA101KF	COIL	1	
Q106, 107	2SC3937	TRANSISTOR	2		L108	RLQZB471KT-D	COIL	1	
Q109	UN5216-Q	TRANSISTOR	1		L109, 110	ELJFA180KF	COIL	2	
Q201	2SB956R	TRANSISTOR	1		L120	RLQZB101KT-D	COIL	1	
Q271	2SD1280-S	TRANSISTOR	1		L202	RLM9R001-Z	COIL	1	
Q272	DTA123K	TRANSISTOR	1		L203	RLQZB101KT-D	COIL	1	
Q274	2SB709-R	TRANSISTOR	1		L301	EXCELD35V	COMBINATION PART	1	
Q275	DTC124EK	TRANSISTOR	1		L301	RLQZB2R2KT-D	COIL	1	
Q276	DTB113ZK	TRANSISTOR	1		L302	RL03B002-M	COIL	1	
Q277	DTA114EK	TRANSISTOR	1		L303	ELEXT470KA9	COIL	1	
Q301	DTC124EU	TRANSISTOR	1		L401-404	EXCELD35	COMBINATION PART	4	
Q302	DTA124EU	TRANSISTOR	1		L501-504	EXCELD35	COMBINATION PART	4	
Q303	DTC124EU	TRANSISTOR	1		L550-552	EXCELD35	COMBINATION PART	3	
Q304	2SC3931C	TRANSISTOR	1						
Q305	DTC124EU	TRANSISTOR	1						
Q401	UN4212	TRANSISTOR	1						
Q402	UN4112	TRANSISTOR	1						

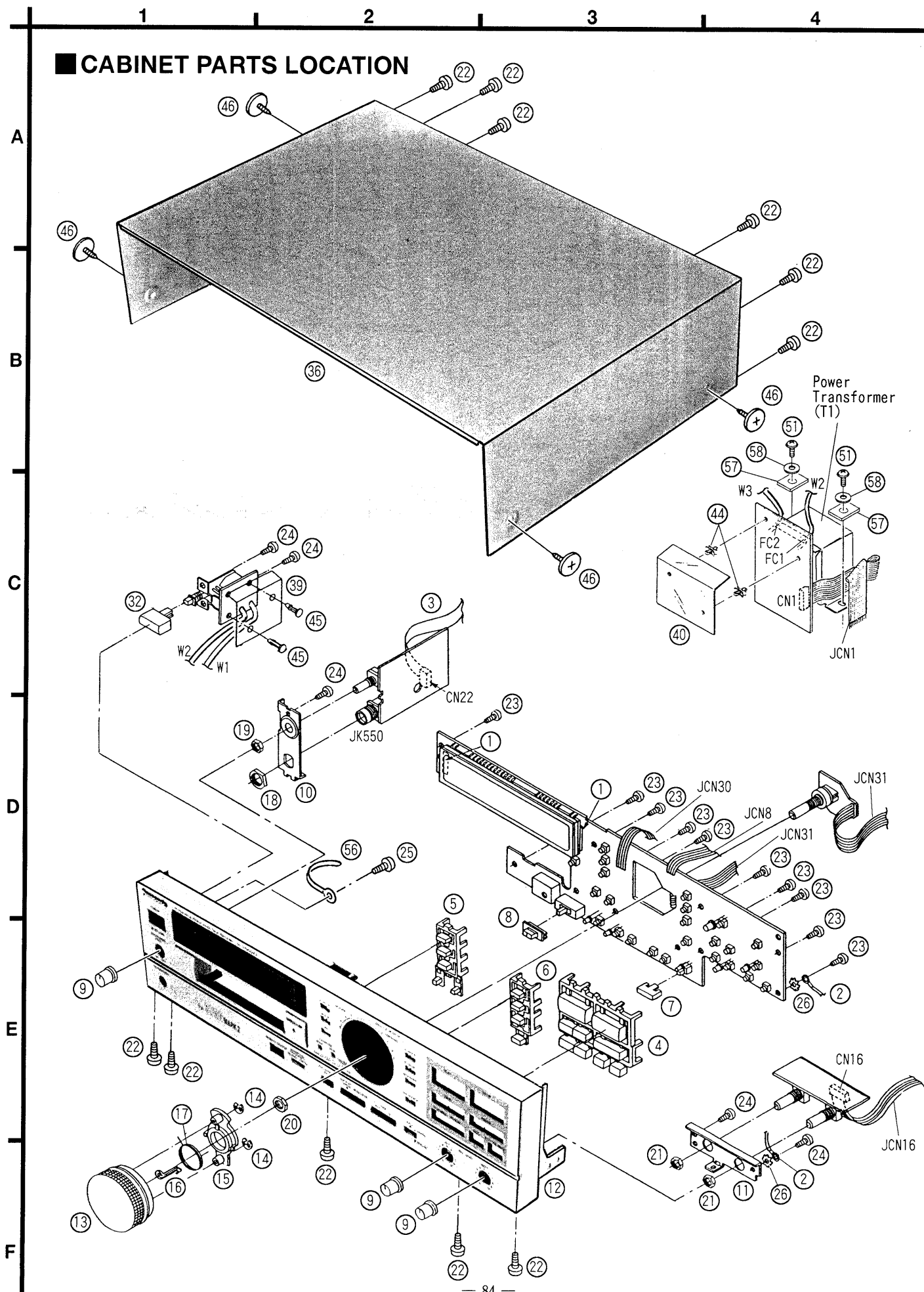
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		TRANSFORMER(S)			JCN8	RWJ6506230KQ	FLAT CABLE(6P)	1	
					JCN16	REZ0693	CONNECTOR ASS'Y(6P)	1	
					JCN30	RWJ6505350KQ	FLAT CABLE(5P)	1	
T1	RTP1L4B001	POWER TRANSFORMER	1	<I>	JCN31	RWJ6505070KK	FLAT CABLE(5P)	1	
T301	RLZ0006-0	TRANSFORMER	1		JCN42	REZ0125A	CONNECTOR ASS'Y(10P)	1	
		OSCILLATOR(S)			JCN46	REZ0126A	CONNECTOR ASS'Y(5P)	1	
					JCN56	REZ0127A	CONNECTOR ASS'Y(6P)	1	
X201	RSXC8M00J01	OSCILLATOR	1		JCN70	RWJ4302200KK	FLAT CABLE(2P)	1	
X202	RSXY8M00M01	OSCILLATOR	1		W1,W2	REZ0123A	CONNECTOR ASS'Y(1P)	1	
X301	RSXY8M00M01	OSCILLATOR	1		W3	REZ0124B	CONNECTOR ASS'Y(1P)	1	
X302	RSXC28M2S01	OSCILLATOR	1		W4	REZ0237A	CONNECTOR ASS'Y(1P)	1	
X303	RSXC24M5S03	OSCILLATOR	1				RELAY(S)		
X304	RSXC22M5S01	OSCILLATOR	1		RL501, 502	RSY0020M-R	RELAY	2	
X305	RSXC16M3S01	OSCILLATOR	1				REMOTE SENSOR		
X601	RSXY6M00M01	OSCILLATOR	1						
		DISPLAY TUBE			RM601	RCDHC-212	REMOTE SENSOR	1	
FL601	RSL0062-F	DISPLAY TUBE	1				FUSE(S)		
		SWITCH(ES)							
					F1	XBA2C02TB0S	FUSE 250V, 0.2A	1	<I>
S1	ESB8249V	POWER	1	<I>					
S601	ESD1511201	SAMPLING FREQ	1						
S602	ESB64805	INPUT(ANALOG/DIGITAL)	1						
S611-628	EVQQT605R	SWITCH	18						
S630-635	EVQQT605R	SWITCH	6						
S751, 752	SSPD18	SWITCH	2						
		JACK(S)							
JK1	SJVD06	AC INLET	1						
JK301	RJS1A9803-R	AES/EBU REC IN	1						
JK301A	QJS1955H	REMOTE CONTROL	1						
JK302	RJS1A9703-R	DIGITAL AES/EBU PLAY OUT	1						
JK303	SJFD7	IEC TYPE2 REC IN	1						
JK304	SJFD7	IEC TYPE2 PLAY OUT	1						
JK401	RJS1A9703-R	ANALOG REC IN(L)	1						
JK402	RJS1A9703-R	ANALOG REC IN(R)	1						
JK501	RJS1A9803-R	ANALOG PLAY OUT(L)	1						
JK502	RJS1A9803-R	ANALOG PLAY OUT(R)	1						
JK550	SJJD19	HEADPHONES	1						
		CONNECTOR(S)							
CN1	RHR197ZA	CONNECTOR(10P)	1						
CN2	SJSD1005	CONNECTOR(10P)	1						
CN7	RJS6T4ZA	CONNECTOR(6P)	1						
CN9	REZ0121A	CONNECTOR(6P)	1						
CN10	RJP6G27ZA	CONNECTOR(6P)	1						
CN15	RJS6T4ZA	CONNECTOR(6P)	1						
CN16	RHR193ZA	CONNECTOR(6P)	1						
CN21, 22	RJS6Q8ZA	CONNECTOR(6P)	2						
CN29	RJS5T7ZA	CONNECTOR(5P)	1						
CN41	RJP10G27ZA	CONNECTOR(10P)	1						
CN43	RJS1A6717-Q	CONNECTOR(17P)	1						
CN44	SJSD1721	CONNECTOR(17P)	1						
CN45	RJP5G27ZA	CONNECTOR(5P)	1						
CN51	RJP3G27ZA	CONNECTOR(3P)	1						
CN52-54	RJS1A6315	CONNECTOR(15P)	3						
CN56	RJP4G28ZA	CONNECTOR(4P)	1						
CN57	RJP6G28ZA	CONNECTOR(6P)	1						
CN58	RJT036W002	CONNECTOR(2P)	1						
CN62	RJS7Q11ZA	CONNECTOR(7P)	1						
CN301, 302	RJU057W012	CONNECTOR(12P)	2						
CN303, 304	RJT057W012	CONNECTOR(12P)	2						
		FUSE HOLDER(S)							
FC1,2	EYF52BC	FUSE HOLDER	2	<I>					
		CONNECT.ASS'Y & FLAT CABLE							
JCN1	RWJ43101500Q	FLAT CABLE(10P)	1						

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
		CABINET AND CHASSIS					MECHANISM PARTS		
1	RMA0202	FL HOLDER	2		101	EVQMR4002	CASSETTE SW.	1	
2	REZ0135A	CONNECTOR ASS'Y(1P)	1		102	QBW2008	WASHER	6	
3	REZ0136A	FFC(6P)	1		103	QBW2030	WASHER	1	
4	RGU0235A-H	OPERATION(A) BUTTON	1		104	QBW2059	WASHER	11	
5	RGU0236-H	OPERATION(B) BUTTON	1		105	RDG0066	MAIN GEAR(A)	1	
6	RGU0237-H	OPERATION(C) BUTTON	1		106	RDG0067	MAIN GEAR(B)	1	
7	RGU0238	INPUT SELECTOR BUTTON	1		107	RDG0068	IDLER GEAR(P)	1	
8	RGV0033	SAMPLING FREQ.SELECTOR KNOB	1		108	RDG0069	IDLER GEAR(F)	1	
9	RGW0055	H.P/BALANCE/REC LEVEL KNOB	3		109	RDG0070	COUNTER GEAR	1	
10	RMA0192	HEADPHONES ANGLE	1		110	RDG0073	MODE REPEATING GEAR	1	
11	RMA0193	BALANCE&REC LEVEL ANGLE	1		111	RDG0006	LOAD CAM	1	
12	RFKGV3800P-H	FRONT PANEL ASS'Y	1		112	RDG0007	MODE CAM	1	
13	RFKNV3700PH	SHUTTLE KNOB ASS'Y	1		113	RDP0020	FIXED POST	1	
14	CSTW-2	RING	2		114	RDP0021	FIXED POST PLATE	1	
15	SHRD202	RESIN PARTS	1		115	REM0001	CAPSTAN UNIT	1	
16	SHR9451	NYLON STOPPER	1		116	REM0009	MODE MOTOR ASS'Y	1	
17	SUSD162	SPRING	1		117	RMN0028	MODE MOTOR HOLDER	1	
18	XNS12	NUT	1		118	REQ0012	INTERFACE P.C.B.	1	
19	XNS75	NUT	1		119	REQ0014	BEGIN/END DET.SENSOR ASS'Y	2	
20	XNS85	NUT	1		120	RMN0030	BEGIN DET.ANGLE	1	
21	XNS9	NUT	2		122	RMN0029	END DET.ANGLE	1	
22	XTBS3+8JFZ	SCREW	18		123	RMQ0059	LEAD OPENER	1	
23	XTB3+10GFR	SCREW	10		124	REQ0018	BEGIN/END DET.LED ASS'Y	1	
24	XTB3+8GFR	SCREW	5		125	EVQWXM001	LOAD SW ASS'Y	1	
25	XTB3+8J	SCREW	5		126	EVQWXM001	MODE SW ASS'Y	1	
26	XWC3B	WASHER	2		127	RMB0061	FIXED POST SPRING	1	
27	RMA0408	REMOTE CONTROL ANGLE	1		128	RMB0063	GUIDE ROLLER SPRING	1	
28	REZ0137B	FFC(17P)	1		129	RMB0071	S.REEL SPRING	1	
29	RGK0165C-H	TRAY ORNAMENT	1		130	RMB0073	T.REEL SPRING	1	
30	RGQ0046	WIRE SADDLE	1		131	RMB0074	TENSION SPRING	1	
31	RGR0235A-B	REAR PANEL ASS'Y	1		132	RMB0075	BRAKE SPRING	1	
32	RGU0030A	POWER BUTTON	1		133	RMCO034	ANGLE	1	
33	RHD30068	SCREW	2		134	RME0037	BT SPRING	1	
34	RKA0053-K	FOOT	4		135	RML0088	PINCH LEVER	1	
35	RKF0089	BOTTOM PLATE	1		136	RML0090	TENSION LEVER	1	
36	RKM0076-H1	CABINET	1		137	RML0094	S.BRAKE LEVER	1	
37	RMK0068	CHASSIS	1		138	RML0095	T.BRAKE LEVER	1	
38	RMN0203	P.C.B. HOLDER	1		139	RML0103	LOAD SELECT LEVER	1	
39	RMZ0096	INSULATION SHEET(A)	1		140	RMQ0052	S.STOPPER	1	
40	RMZ0356	INSULATION SHEET(B)	2		141	RMQ0053	T.STOPPER	1	
41	RQCS0015	CAUTION LABEL	1		142	RMQ0055	LOAD GUIDE HOLDER	1	
42	SHDD4	SCREW	4		143	RMQ0056	GUIDE ARM STOPPER	1	
43	SHE181	P.C.B. SUPPORT	5		144	RMQ0058	MODE GUIDE PLATE	1	
44	SHRD16	P.C.B. SPACER	4		145	RMQ0062	IDLER GUIDE	1	
45	SHR9815	RIVET	2		146	RMQ0063	TENSION SPRING HOOK	1	
46	SNE2095	SCREW	4		147	RMQ0064	S.BRAKE DRIVE PLATE	1	
47	XSN3+6FZ	SCREW	12		148	RMQ0065	T.BRAKE DRIVE PLATE	1	
48	XTBS3+8FFZ	SCREW	4		149	RNW172ZA	WASHER	2	
49	XTB3+20JFR	SCREW	5		150	RUS740ZA	EARTH ANGLE	1	
50	XTB3+6F	SCREW	1		151	RDG0071	IDLER GEAR	1	
51	XTB4+8F	SCREW	3		152	RMB0069	IDLER SPRING	1	
52	XTV3+6G	SCREW	4		153	RXL0051	IDLER ARM ASS'Y	1	
53	XWC4B	WASHER	2		154	RXG0011	DRIVE GEAR	1	
54	YD20020417A	CONNECTOR ASS'Y (1P)	1		155	RXK0019	CHASSIS UNIT	1	
55	RMG0134	MECHANISM SUPPORT	4		156	RXL0035	TENSION ARM ASS'Y	1	
56	SHR330	BINDER	1		157	RXL0036	TENSION BAND ASS'Y	1	
57	RMA0988	REINFORCING PLATE	2		158	RMB0066	PIN PRESSURE SPRING	1	
58	XWA4B	WASHER	2		159	RMB0067	PINCH ROLLER SPRING	1	
					160	RMN0036	PIN PRESSURE LINK	1	
					161	RXL0046	PINCH ARM ASS'Y	1	
					162	RXL0048	BT LEVER ASS'Y	1	
					163	RXL0049	S.BRAKE ASS'Y	1	
					164	RXL0050	T.BRAKE ASS'Y	1	
					165	RXL0052	S.LOAD ARM	1	
					166	RXL0054	T.LOAD ARM	1	
					167	RXL0056	LOAD LEVER	1	
					168	RXL0057	P.F.IDLER ASS'Y	1	
					169	RXL0058	P.F.SELECT LEVER	1	
					170	RMN0018	GUIDE LINK ASS'Y	1	
					171	RMN0019	PLUNGER LINK ASS'Y	1	
					172	RXP0016	S.POST ROLLER ASS'Y	1	
					172-1	RXP0008	POST ROLLER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks	Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
173	RXP0017	T.POST ROLLER ASS'Y	1		247	XTN3+8F	SCREW	4	
173-1	RXP0008	POST ROLLER	1		248	XSN2+3	SCREW	2	
174	RXP0020	T.GUIDE ROLLER	1				PACKING MATERIAL		
175	RXQ0057	T.INCLINED BASE ASS'Y	1		P1	RPG2764	PACKING CASE	1	
176	RXQ0079	LOAD HOLDER ASS'Y	1		P2	RPN0391	ACCESSORIES BOX	1	
177	RXR0006	S.REEL ASS'Y	1		P3	RPN0392	PAD(ACCESSORIES)	1	
178	RXR0007	T.REEL ASS'Y	1		P4	XZB09X10C03	PROTECTION BAG(SCREW)	1	
179	VEG0752	CYLINDER UNIT	1		P5	RPF0017	PROTECTION BAG(NUIT)	1	
179-1	VEH0460	UPPER CYLINDER	1		P6	RPN0221	PAD(FRONT)	1	
179-2	VHD0593	SCREW	2		P7	RPN0222	PAD(BACK)	1	
180	RSJ0006	PLUNGER	1		P8	XZB25X34C03X	PROTECTION BAG(F.B)	1	
181	QBW2081A	WASHER	3		P9	RPH0065	SOFT SHEET	1	
182	RXP0031	S.GUIDE ROLLER ASS'Y	1				ACCESSORIES		
183	RHW12009	GUIDE WASHER	1		A1	RQF3077	INSTRUCTION MANUAL	1	
184	XQN14+C16	SCREW	2		A2	RJA0003	AC POWER SUPPLY CORD	1	<I>(SF)
185	RHQ0014	SCREW	13		A3	RYQ0059	RACK EARS	1	
186	RHQ0007	SCREW	6		A4	RYQ0060	RACK PANELS	1	
187	RHQ0015	SCREW	1		A5	XYN3+F10FZ	SCREWS	8	
188	RHQ0016	SCREW	4		A6	RAK-SV012WH	REMOTE CONTROL TRANSMITTER	1	
189	RHQ0017	SCREW	3		A6-1	RKK0020-K	BATTERY COVER	1	FOR R/C TRANSMITTER
190	XQN16+A45T	SCREW	3				<GREASE OR JIG/TOOL>		
191	XQN2+A2	SCREW	1				TEST TAPE		
192	RHQ0018	SCREW	1		SA1	RD-PG01	PG REFERENCE TAPE	1	
193	RHQ0019	SCREW	1		SA2	RD-ER01	ERROR RATE TAPE	1	
194	RHQ0020	SCREW	3		SA3	RD-LR02	LINEARITY ADJ.TAPE	1	
195	QHQ1371	SCREW	2				DRIVER		
		LOADING PARTS			SA4	SZZV1102C	POST ROLLER ADJ.SCREWDRIIVER	1	
201	RFKPVD10-K	MOTOR ASS'Y(M751)	1				GREASE		
202	RDB0032	GEAR SHAFT HOLDER	2		SA5	RFKX0002	COMPOUND GREASE	1	
203	RDG0120	MAIN GEAR(R)	1		SA6	RZZOL05	DYNAMIC GREASE	1	
204	RDG0122	MAIN GEAR(L)	1				<PRINTED CIRCUIT BOARDS		
205	RFKNVD10BK	GEAR SHAFT ASS'Y	1				ASS'Y>		
206	RJP2627ZA	CONNECTOR(CN72)(2P)	1		PCB1	REP0694C	OPERATION P.C.B. ASS'Y	1	<RTL>
207	RMA0194	SHAFT FRAME	1		PCB2	REP2246A	MAIN P.C.B.ASS'Y	1	<RTL>
208	RMA0197	CASSETTE HOLDER ANGLE	1		PCB3	REP2247A	DIGITAL P.C.B.ASS'Y	1	<RTL>
209	RMA0200	HOLDER ARM	2		PCB4	REP0417A	RF/SERVO P.C.B.ASS'Y	1	<RTL>
210	RMB0110	SPRING	2		PCB5	REP0421A	TRAY MOTOR/SW P.C.B.ASS'Y	1	<RTL>
211	RMB0111	SPRING	1				<MECHANISM ASS'Y>		
212	RMB0131	SPRING	1		MECH1	RAA1001	MECHANISM UNIT	1	
213	RMB0144	SPRING	1						
214	RMCO050	ANGLE(L)	1						
215	RMCO051	ANGLE(R)	1						
216	RMGO090	RUBBER	2						
217	RML0139	SHAFT HOLDER(R)	1						
218	RML0140	HOLDER(R)	1						
219	RML0141	SHAFT HOLDER(L)	1						
220	RML0142	HOLDER(R)	1						
221	RML0150	MAIN GEAR HOLDER	1						
222	RMR0206	TRAY	1						
223	RMR0207	CASSETTE HOLDER	1						
224	RMR0209	SHAFT ANGLE	1						
225	RMS0158	SHAFT	1						
226	RMS0160	SHAFT	1						
227	RMS0165	SHAFT	1						
228	RXA0046	SUB FRAME	1						
229	RXA0047	CASSETTE HOLDER	1						
230	RXK0059	FRAME	1						
231	SMQ20025	BELT	1						
232	SMQ40032	PULLEY GEAR	1						
233	EYHS78R	DEW SENSOR	1						
234	SHE36	EARTH TERMINAL	1						
235	RSC0066	SHIELD PLATE	1						
236	RXA0060	MECHANISM FRAME	1						
237	RMX0044	WASHER	1						
238	XSS26+4FZ	SCREW	4						
239	XTB3+6J	SCREW	7						
240	XTN3+10G	SCREW	2						
241	XTN3+6B	SCREW	3						
242	XUC15FT	WASHER	2						
243	XUC2FT	WASHER	2						
244	XUC3FT	WASHER	3						
245	XYN26+C33	SCREW	2						
246	XTB3+6F	SCREW	4						

**PACKAGING**

# CABINET PARTS LOCATION



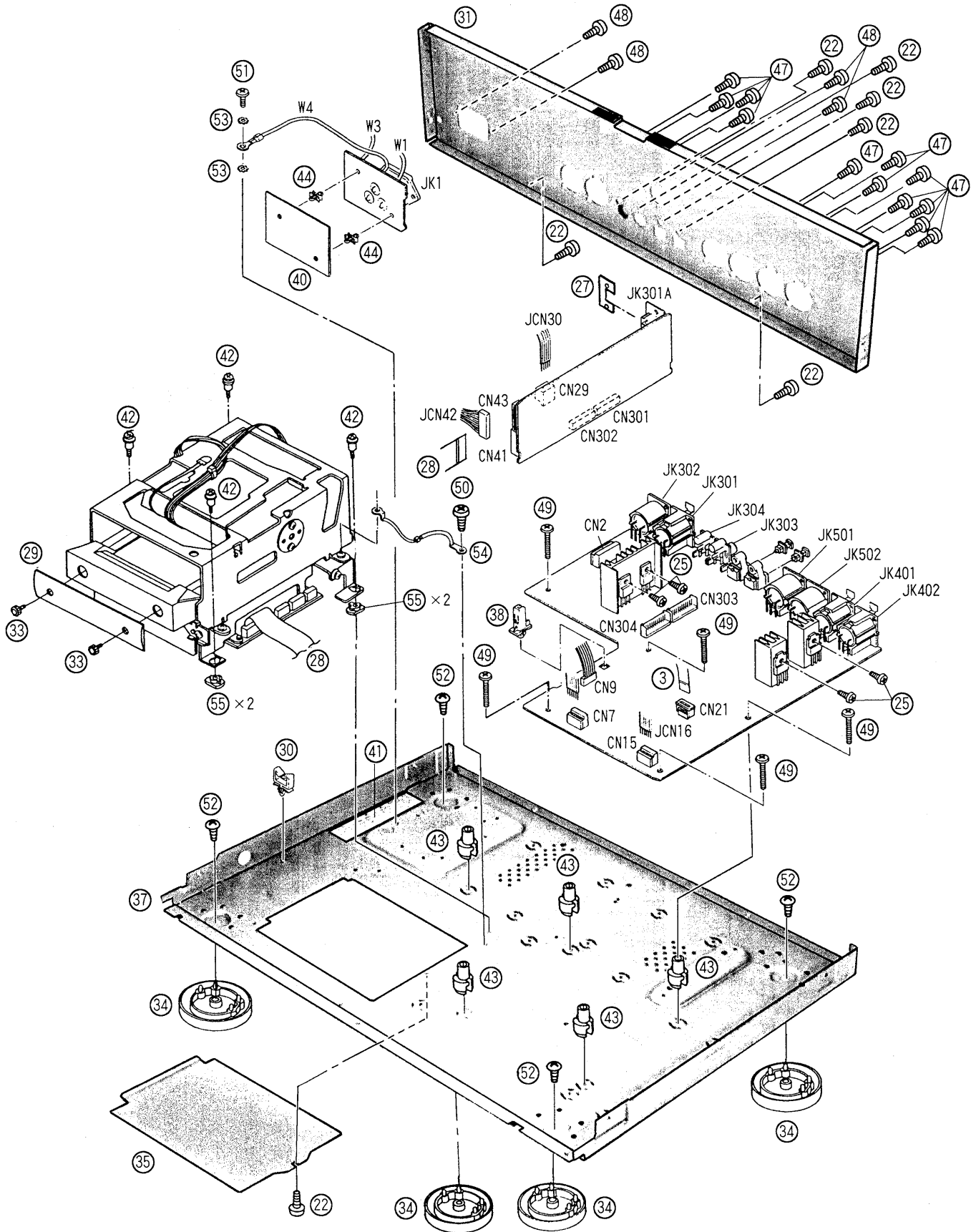


5

6

7

8



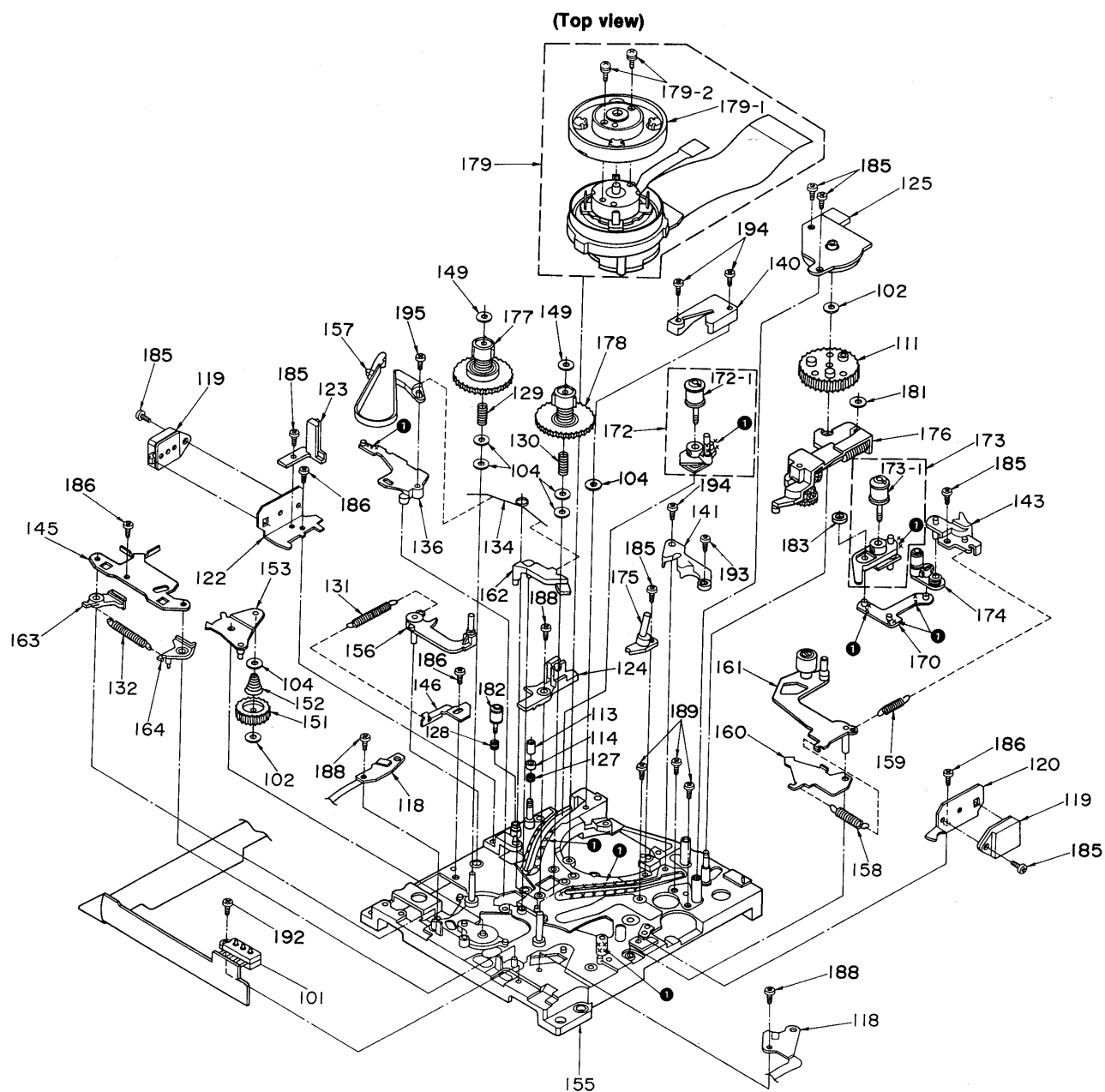
1

2

3

4

## MECHANISM PARTS LOCATION



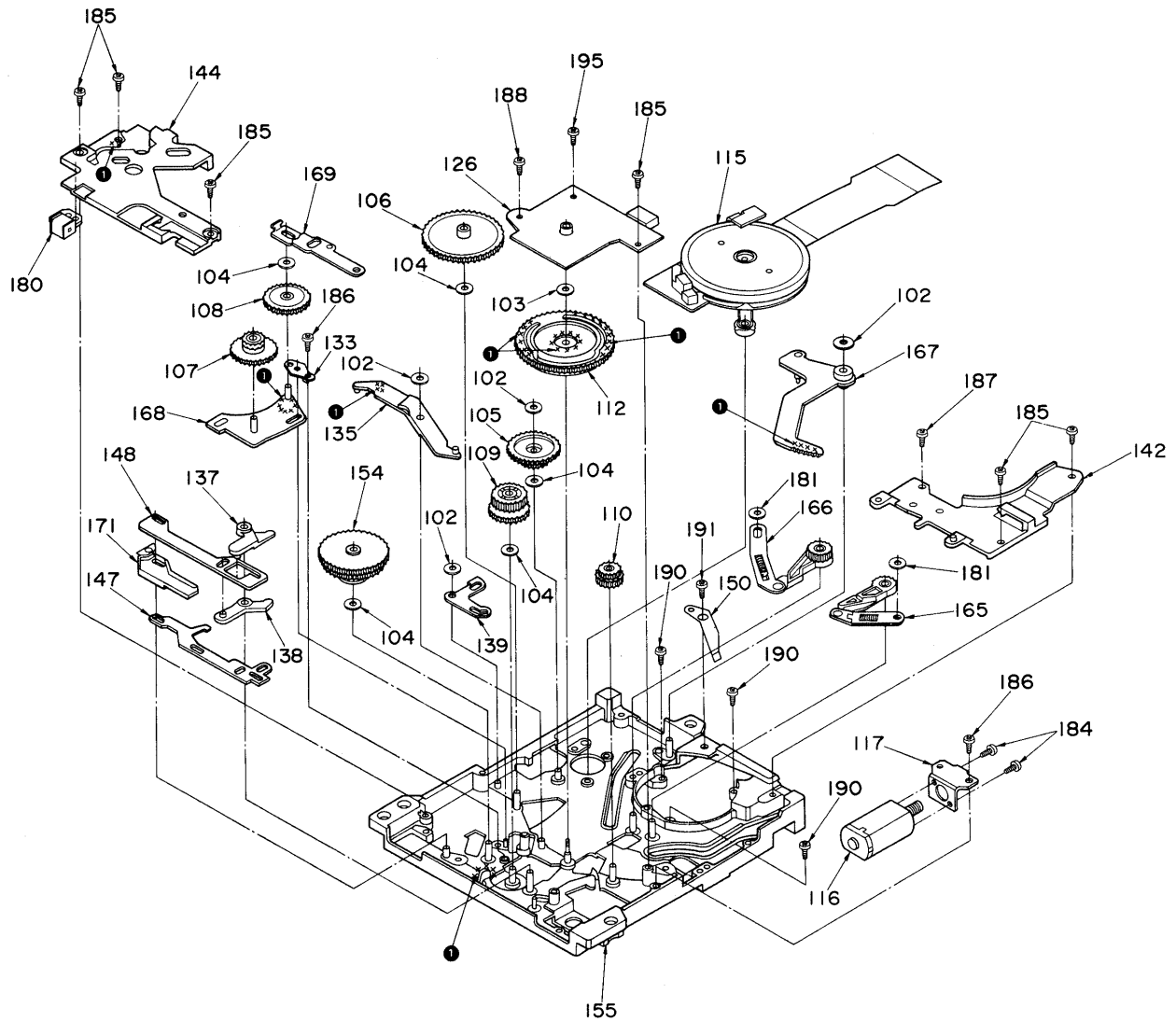
5

6

7

8

(Bottom view)



**Note:** When changing mechanism parts, apply the specified grease to the areas marked "X" as shown in the drawing.

Ref. No.	Part No.
①	RZZ0L05

1

2

3

4

**LOADING PARTS LOCATION**

A

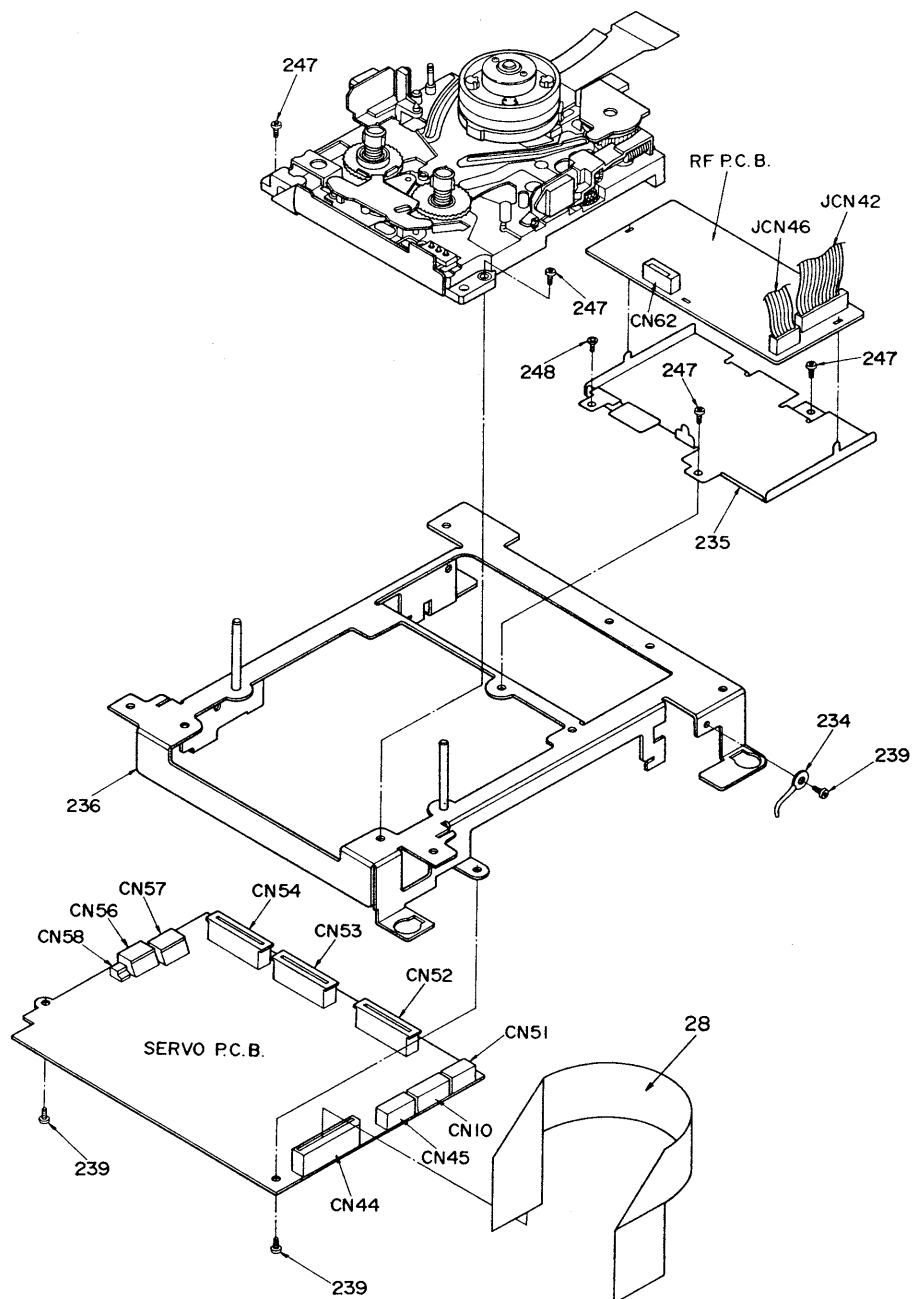
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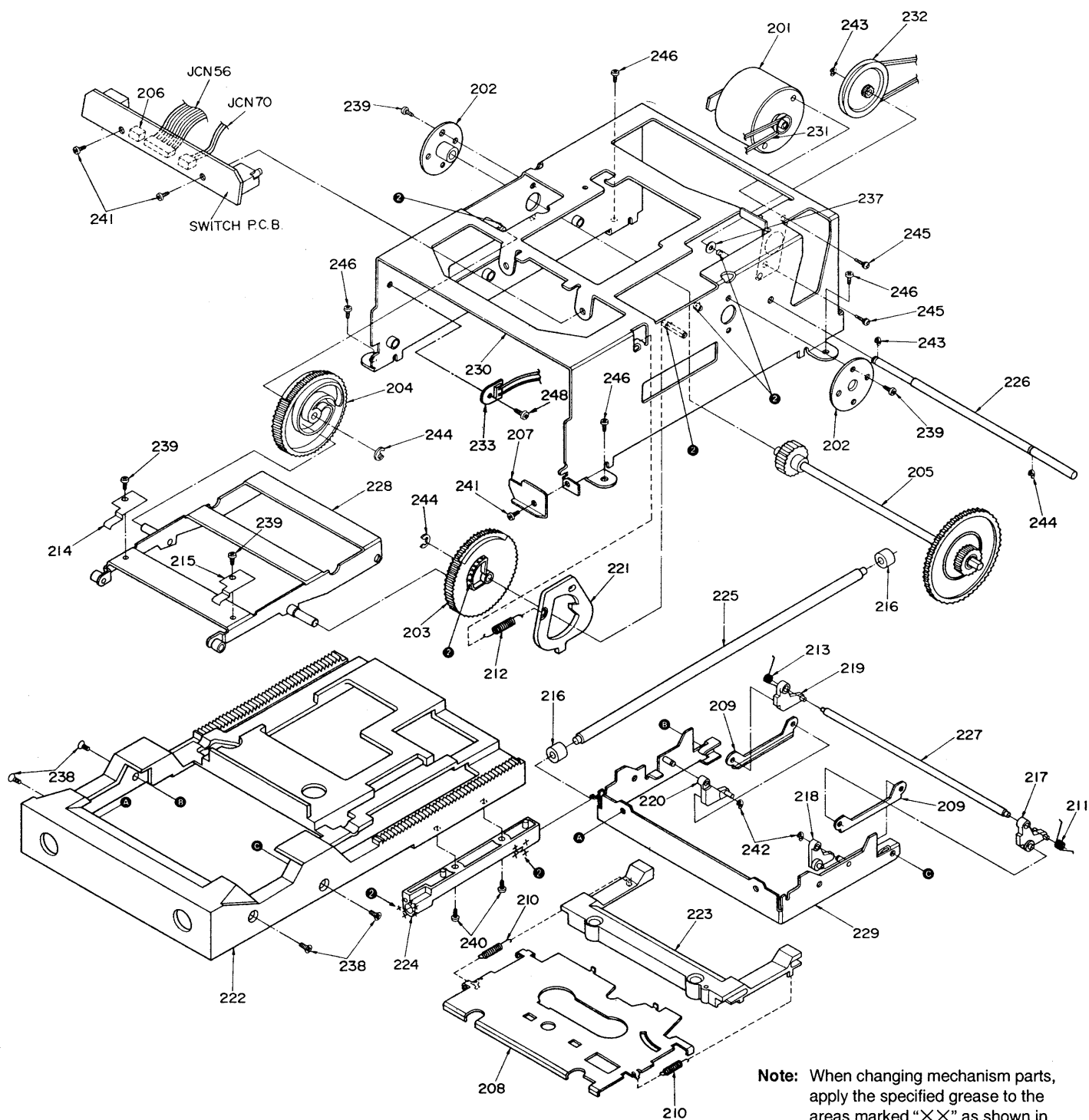
C

D

E

F





**Note:** When changing mechanism parts, apply the specified grease to the areas marked "X" as shown in the drawing.

Ref. No.	Part No.
②	RFKX0002

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